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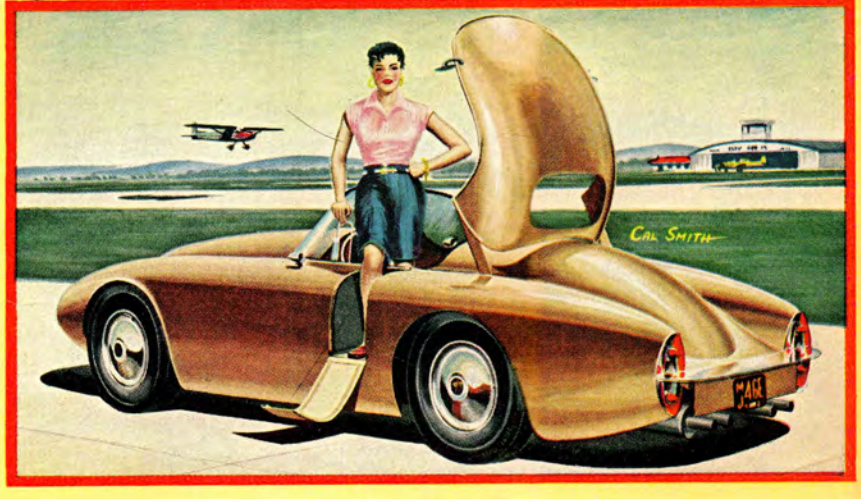

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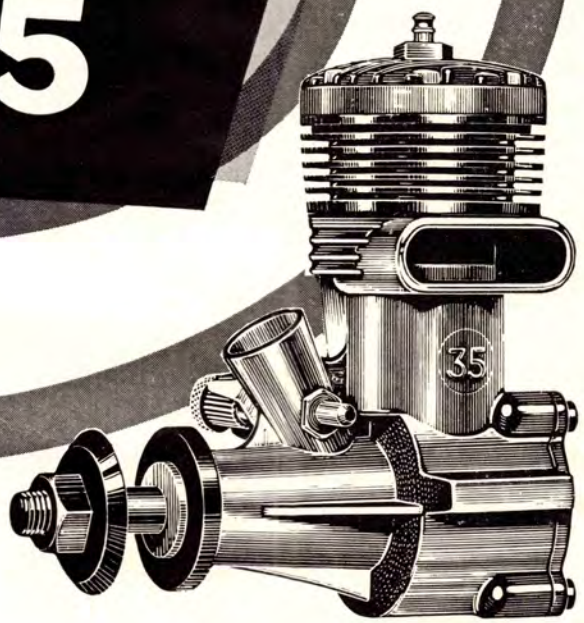

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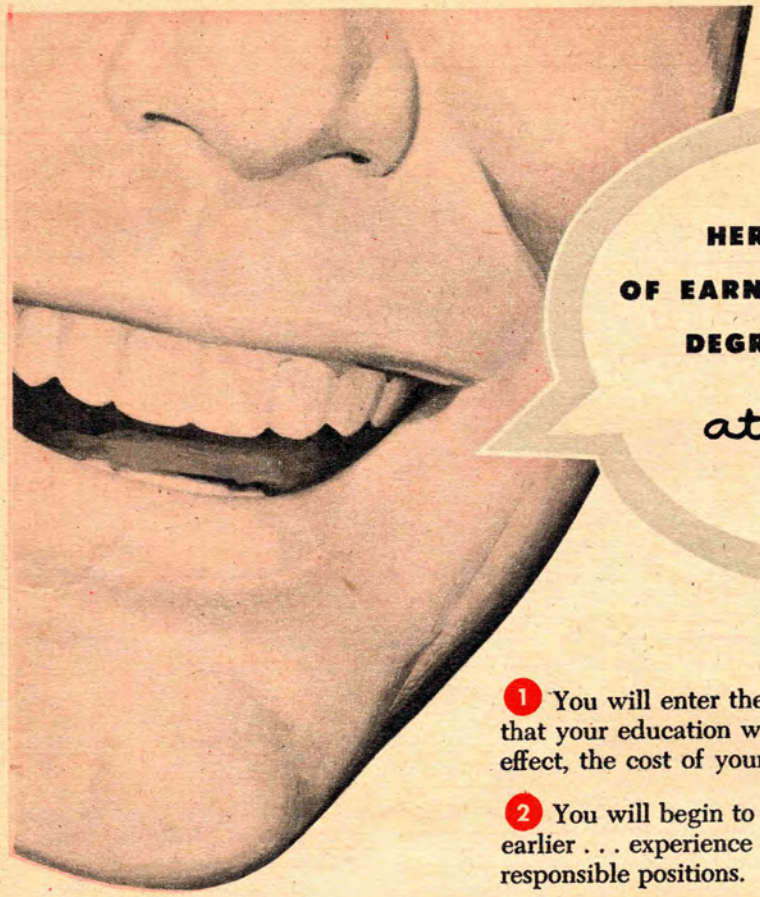

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This is to certify that
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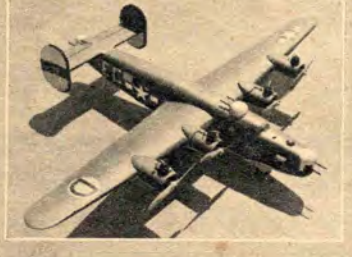
Bobby Benson of the B-Bar-B
Hobby Boy of America
March 12 1954



In this issue comes the big announcement about the placer gold mine that the Mutual Broadcasting System is giving away in its big Bobby Benson B-Bar-B ranch model building contest. This contest is based on the series of models which have been appearing in ATH. (Now, maybe, you can understand why we've been saying that all modelers should try their hand at this!) Second prize is a 4-year college scholarship! What we want to point out about all this is that Mutual's contest with more than 100 prizes is *in addition to* and not connected with our own model building-photo taking competition. In other words ATH is offering $100, $50, radios, camera sets, pen-type flashlights, etc., for best photos of 1) the Benson bunk house, 2) helicopter hangar and 3) ranch barn and work buildings. Anyone can enter our ATH contest regardless of age. In the MBS contest you have to be under 18 to enter and you construct and photograph as much of the whole ranch as you wish. So if you've been making the separate buildings in ATH's contest—and if you'll still be under 18 on July 18, 1954—you can use these to complete your ranch layout for the Mutual-Benson deal. Good luck—hope you win!

In conjunction with the Combat Kite feature this month a word of caution: never use a metallic kite string. Who would? Well, a 35-year-old Utah kite flyer was killed this spring. Kite string he was using contained a metallic thread which conducted current from 7,200 volt power line to flyer. We stress this since some air-modeler in his haste might try to fly his kite on light control line wire. Don't do it!

Our lead photo shows Pan American World Airway's educational director George (Uncle PAA-Load) Gardner with the National Modelplane Washtub Trophy which was presented to him by its previous recipient. George is holding a plaque which reads: "To George Gardner and Pan American World Airways for their enthusiastic contribution to model flying through the stimulating and educational PAA Load events. Presented for the Mirror Model Flying Fair by Ted Clodius." Mr. Clodius—we're working backwards, now—got the trophy from Bill Effinger who got it from Walt Billett (Flying 8-Ball Club) who got it from the Twin city (St. Paul-Minneapolis) Hobby Dealers.

To Bobby Benson of the B-Bar-B went that certificate honoring him as "Hobby Boy of America" in recognition of his efforts and others on his national radio show in publicizing the value of hobby activities. The presentation parchment reads: "This is to certify that Air Trails HOBBIES For Young Men on behalf of all hobby-active Young Americans appoints, proclaims and salutes Bobby Benson of the B-Bar-B as Hobby Boy of America. May he long continue his outstanding efforts which demonstrate that creative do-it-yourself hobbies are fun, educational, and of exceptional value to the future of this nation. Executed at New York City, Hobby Center of the World by Albert L. Lewis, editor, acting for hobby-model enthusiasts everywhere."

Two final items: Updated photos of Moulton B. Taylor's Aerocar at Lakeview, Wash. Two-tone version is refined model. Dismantles easier, rides over road better, much lighter through use of more magnesium. The B-24? It's a model and it's scheduled for the next issue as a modeling project for *two* engines.

Speaking of what's coming next we must confess that we've had to reschedule several items after announcing they'd be "in the next issue." Peculiar series of circumstances prompted this. In one case it was a happy event: the arrival of Paul Palanek's latest son held up final touches on his Central-Lamson crop dusting plane-flying scale model. Other contributors and designers have been hit by illness. But we hope to get back on the track and again on schedule.

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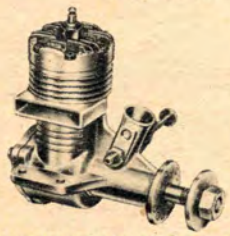

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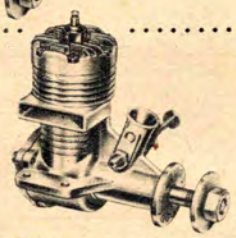

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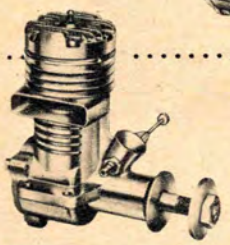

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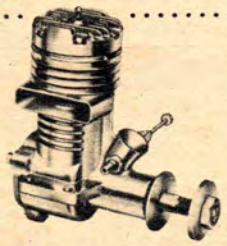

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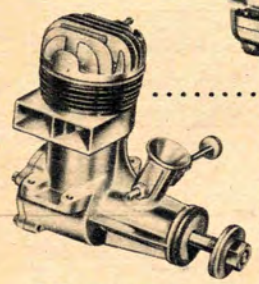

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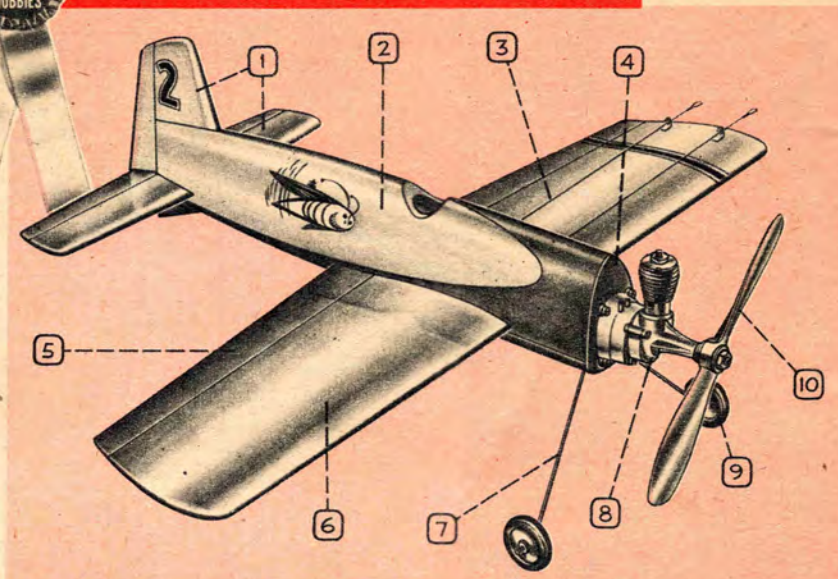
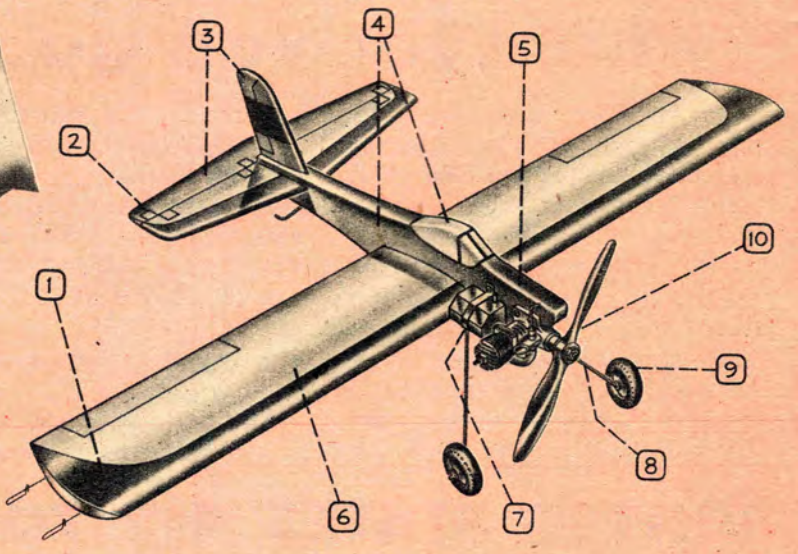


■ A balsawood and plywood prefabricated parts assembly kit, this *Space Buggy* by Enterprise Model Aircraft comes with an engine for control line flying. Its features are: 1) die-cut balsa and plywood tail group; 2) ready-carved, hollowed balsa fuselage with die-cut bottom; 3) pushrod and lead wires supplied; 4) die-cut plywood firewall; 5) die-cut balsa stationary flaps; 6) ready-shaped balsa wing with control bearing installed; 7) formed steel wire gear; 8) complete "Space Bug Jr." engine included; 9) rubber wheels included; 10) plastic "Kaysun" propeller. *Also supplied*: hardware packet, engine wrench and fiber control handle.

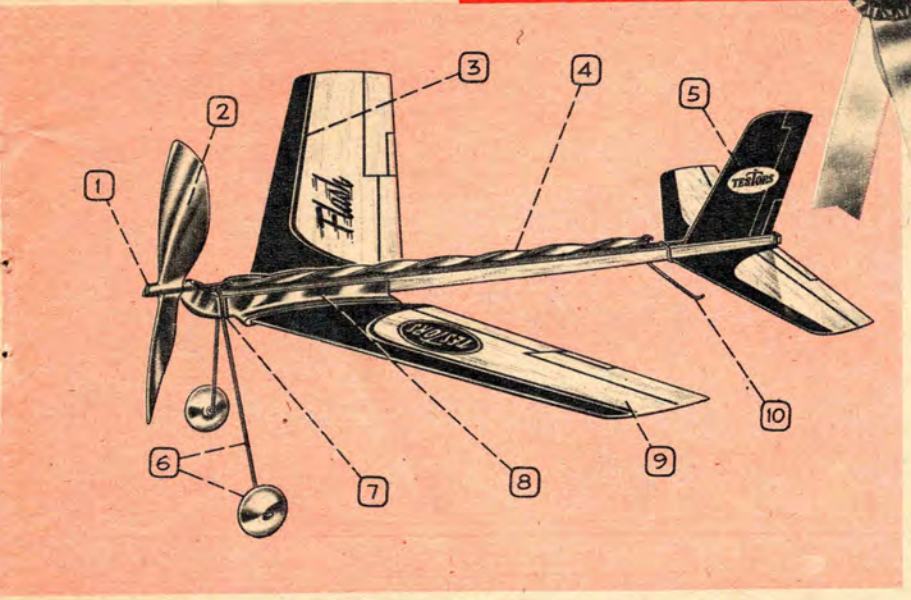
■ Designed and marketed as a training model, this plane features a one-piece, solid, pre-shaped symmetrical balsawood wing. Parts are: 1) die-cut plywood line guide and control horn; 2) pinked tape hinge material; 3) die-cut balsa tail group; 4) bandsawed balsa body; 5) pre-shaped hardwood motor mount grooved for gear strut; 6) fully shaped streamline-section balsa wing; 7) tank installation detailed in plan; 8) pre-formed steel wire landing gear; 9) plastic wheels with metal grommets; 10) for .14 to .19 engines.

AIR TRAILS HOBBIES

Amcraft "Jetster"

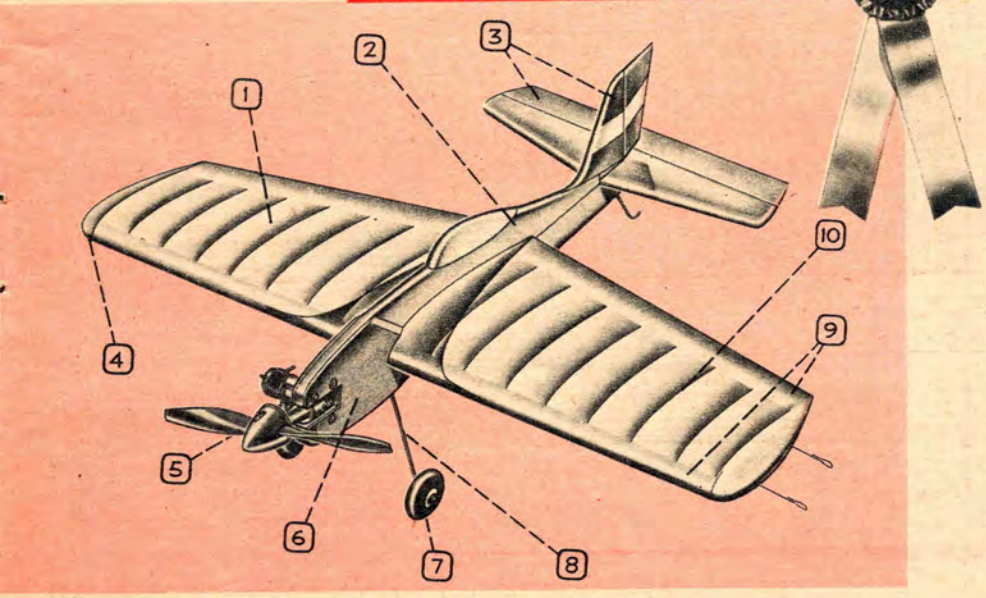


Testor "Flash"



■ Quite different from other types of ready-to-fly rubber powered stick R.O.G. models is this design from Testor Chemical Co. Noteworthy is the freewheeling prop and plastic front fuselage unit. Other points: 1) ratchet freewheel device molded in hub; 2) wide blade, red plastic propeller; 3) bright red color printing; 4) "T-56" contest quality rubber motor; 5) die-cut tail, color printed; 6) formed steel gear with red plastic wheels; 7) molded retainer for landing gear; 8) red plastic body member holds wing halves, body stick and prop shaft; 9) pre-cambered balsa wing panels; 10) formed music wire hook and tail skid.

P. D. Q. "Circus King"



■ Billed also as a stunt model, this design has acquired quite a reputation in Southern combat circles. Main features are: 1) Silkspan wing covering material; 2) 2-piece balsa die-cut profile fuselage; 3) die-cut tail parts; 4) shaped balsa wing tips; 5) .29 to .35 cu. in. displ. engines recommended; 6) die-cut plywood nose section doublers; 7) wheels not included in kit; 8) formed steel wire landing gear struts; 9) shaped, notched leading and trailing edges; 10) die-cut balsa wing ribs.

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HOBBY BOOKSHELF

Conducted by
WILLIAM J. LOWRY

How to Take Better Photographs (Popular Mechanics Press, 200 East Ontario Street, Chicago 11, Ill., 160 pages—$2.50) is an all-around book for anyone who owns a camera. Whether you are a real "shutter-bug" with an expensive press camera or an occasional "snapper" with a box-type fixed-focus camera, this handbook on basic photography is a great aid. You are taken through the initial steps of this fascinating hobby by clear, simple explanations amply illustrated with diagrams and pictures. What camera to choose is fully discussed, as well as the very latest equipment—with the exception of the newer "stereos."

The chapter on "Darkroom Know-How" is worth reading and re-reading. Step-by-step instruction in setting up a practical darkroom, developing the film, processing prints, toning and special effects are described in detail. The contents of the first three chapters of this book can be found to a greater or lesser degree in many other volumes on photography, but the last five chapters are of special interest.

Each of these latter chapters, "Faces and Figures," "Landscape Photography," "Still Life on a Table Top," "Child Portraiture" and "Animal Pictures" are written by artists in their particular field. The chapter on Still Life presents a new way to record your model building step-by-step—for after all is said and done, isn't a picture worth a thousand words?

Jet Aircraft Simplified by Charles Edward Chapel (Aero Publications Inc., 2162 Sunset Blvd., Los Angeles 26, Calif., 176 pages—$2.75) is a new second edition by one of the leading aviation writers. It brings the latest information and photographs of U. S. jet aircraft and engines, guided missiles, pilotless aircraft and rocket-powered aircraft.

The book starts with the history of jet propulsion (actually discovered around 120 B.C.). Explanation of what "jet propulsion" really is and how it operates, with examples of everyday use with this kind of power is given.

Fully described and illustrated are the operations of the various types of jet powerplants (ramjet, pulsejets, turboprop, and turbojet) and the latest jet engines of various manufacturers (General Electric, Westinghouse, Allison and Wright).

The major portion of the book contains the photographs, descriptions and operation info on latest U.S. jet fighters, bombers, experimental jets, guided missiles as well as the pilotless and rocket-powered airplanes.

This book, incidentally, has been approved by the manufacturers of jet engines and jet aircraft and the Armed Forces.

Commodore John Paul Jones U. S. Navy is by Donald John Munro (The William-Frederick Press, 313 West 35th Street, New York 1, N. Y., 105 pages—$3). The author, a retired captain of the Royal Navy, has written with restraint and sailor-like simplicity the exciting history of our foremost naval hero.

Although much has been written about John Paul Jones (most of it more fiction than fact), the present reliable volume of unadorned truth makes the reader more fully aware of the greatness of this patriot and naval genius. The retelling of the historic engagement between the British frigate *Serapis* and the American ship *Bonhomme Richard* gives the reader a true insight into the magnetic personality of John Paul Jones.

This volume not only includes the high adventure of naval engagements but also the life of the Commodore on both sides of the Atlantic, especially the colorful accounts of his experiences in the glittering courts of Catherine the Great of Russia and Louis XVI of France.

Metalwork for Students by R. Marriott (St. Martin's Press, Inc., 103 Park Ave., New York 17, N. Y., 222 pages—$2.50). Although the blacksmith is becoming as extinct as the proverbial cigar-store Indian, the use of metal both in utilitarian and decorative art is receiving increasing popularity. This book provides for the beginner a basic knowledge of elementary metallurgy, smithing,, machine-shop practice and decorative metal

work. Although designed as a teaching text, it gives the hobbyist interested in working in metal invaluable aid.

History of American Industrial Science by Courtney R. Hall (Library Publishers, New York, N. Y., 453 pages—$4.95). Here is a book that deals with industrial know-how starting with colonial times. An enlightened insight into present-day industry makes the reader aware of the constant need for research and new development in this ever-expanding field. The author has given us a story we can understand, and for the young man who contemplates business as a career, we can recommend no better book for information regarding our modern industrial science.

The Aircraft of the World by William Green and Gerald Pollinger (Hanover House, 575 Madison Ave., New York 22, N. Y., 160 pages—$5.95). This book illustrates and describes in detail every powered aircraft to be seen in the world's skies today. The volume makes an excellent reference text for those interested in design and performance of current aircraft and is particularly valuable for aircraft identification; beside each photograph is a crisp three-view silhouette of aircraft of 25 nations. A system of structural grouping is used which makes for easier comparison of aircraft types as it brings together all those of generally similar appearance.

This book can be best described as a "Poor Man's Jane's." If the $5.95 price is too steep personally, either have your club make the purchase or request your librarian to obtain the volume and place it on your local library's shelf.

The Readers Write

Let's hear from you! Address all letters to Air Trails HOBBIES For Young Men, 304 E. 45th St., New York 17, N. Y.

You Mean Us? . . . I have just received and examined your April 1954 issue of Air Trails HOBBIES for Young Men. This magazine is very well prepared and of astounding broad interest to kids. I wish I were a kid again, or even that my children were young again. I propose to bring this magazine to the attention of the Board of Directors of the National Aeronautic Association at its next meeting in April.

J. F. Victory, Executive Secretary, National Advisory Committee for Aeronautics, Washington, D. C.

. . . Number one issue of Hobbies is now tucked away in my special new filing cabinet (steel, not cardboard!!!). The new format, incorporating as it does all that was excellent in Air Trails, is my idea of just about the most handy monthly one could possibly wish for, for Hobbyists. The limited amount of time I ever get to read, plus the fact that my tired cardboard-rimmed eyes have to be "rationed" among my apparently unending projects (now it's Submarines—that I should sink so low) will from here on be divided between Hobbies, Reader's Digest, and letters from the couple of fans I have an arrangement with to write each month!

Seriously, though, Hobbies is the one journal which smart embryo engineers will keep on file. Those "spreads" featuring automobile, plane, and (when you get round to it) ship history are magnificent. As was the case with old Air Trails, even the ads are usually complete reference catalogues of what is going on in the hobby world. As I have always felt that pastime hobbying should be channeled into helping the hob-

(Continued on page 92)

SOLID SCALE MODEL KITS

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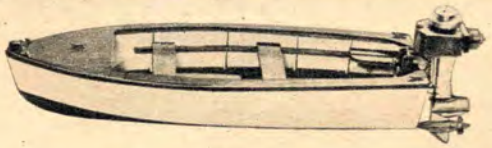

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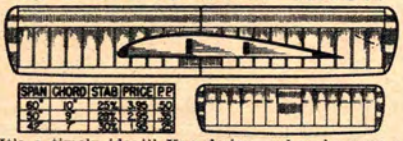

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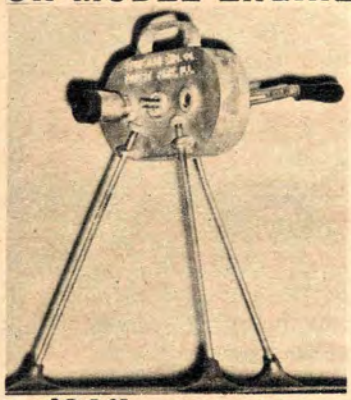

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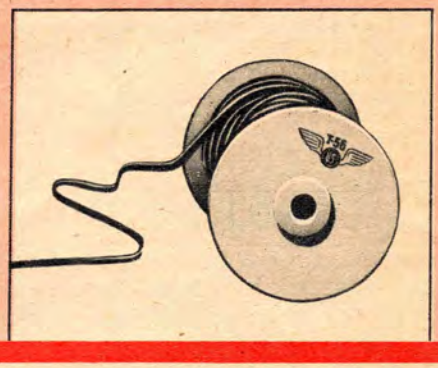

Powered by T-56 means that a model plane, vehicle or boat is using the same propulsion as research workers for ATH utilize on many new projects. Examples of this motive power are Shootin' Stick airplanes (June issue), Catojet Racerdrome (June issue), Water Skimmer (June issue), Sta-Put Putt-Putt (this issue) and Rubber-Flite Kites (this issue). United States Rubber Co.

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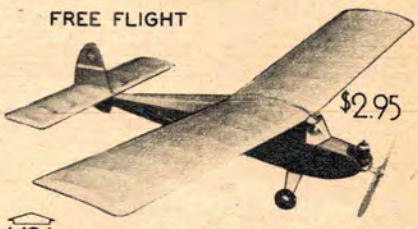

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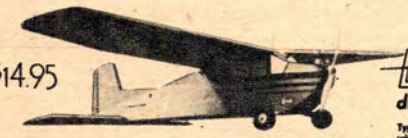

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SHOWCASE

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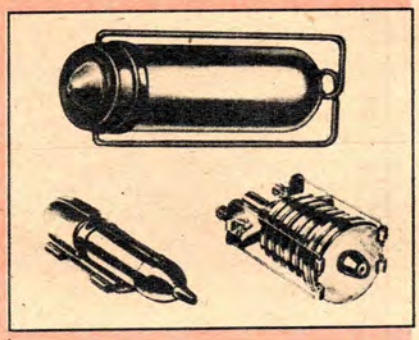
Actual size here (top) is American Telasco's new $1.75 Jetex "Atom" #35 solid fuel rocket engine. Uses shaped fuel pellet to provide constant thrust throughout power run. More on this will be found on page 52 of this issue. Jetex in lower right corner is $4.95 #150 Jetmaster. Not least is the #600 Scorpion which gives 2.2 oz. thrust for 10 seconds —plenty to get big models up and away.



Troubled by "little fingers" walking off with your tools? Best solution is to get a tool set like American Toy and Furniture Co.'s $8 set-up shown here. The younger brother or son will be intrigued by the 6 woodworking projects which are well illustrated in the booklet. Wide variety of first rate tools will keep those little fingers occupied and out of your tool box. Now don't you borrow 'em!

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NEW! IMMEDIATE DELIVERY. The most POWERFUL (5 Watt) TRANSMITTER at the LOWEST PRICE on the market!—Utilizing the famous 2 Tube MAC II circuit, featuring the new "winking" GYRO MAGIC TUNING INDICATOR. Order direct from manufacturer and save! Completely wired & tested, includes 9½ ft. sectional Antenna, remote "clicker" Keying Switch, Meter, Ground plane Booster, Shorting tester Plug. Ready To Operate! Housed in beautiful black crackle lightweight cabinet: 12" x 7" x 6". Available in the following models—all with money-back GUARANTEE.

MODEL X1 TRANSMITTER, as described, with built-in 2 Volt Storage Battery, 2 Volt Vibrator Supply, Battery Charger. Nothing else to buy.
GUARANTEED—Complete.....$37.50

MODEL X2 TRANSMITTER, as described, with built-in dynamotor for operation from 6 Volt Auto battery.
GUARANTEED—Complete..... 29.95

As above, for operation from 12 Volt Auto battery, ADD..... 2.00

MODEL X3 TRANSMITTER, as described, but for dry battery operation, and using Powerful 1-tube 4.8 Watt, low-drain circuit.
GUARANTEED—Complete (less Batteries)..... 23.95

NEW MODEL X2 VB, as described, but using smaller compact cabinet with lightweight vibrator supply for operation from 6 Volt Auto battery.
GUARANTEED—Complete..... 29.95

For greater savings on GUARANTEED R/C Receivers, parts & equipment, see our ad on page 84.

WRITE FOR CATALOG "A"

Gyro Electronics Co., 325 Canal St.
New York 13, N. Y. WOrth 6-1290

NINE NEW OUTBOARDS

Chris-Craft's 18' Outboard

Chris-Craft's 17' Outboard

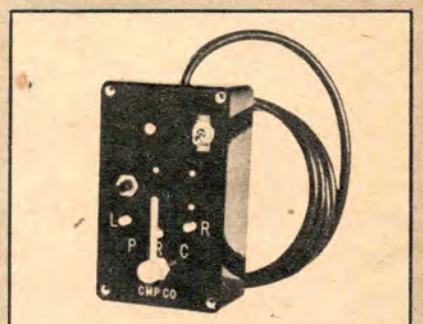
Nine new outboard construction kits now available at all dealers. All an inch to the foot scale or larger. Actual large boat construction, framed hulls planked. Each kit complete with cement, decals, metal fittings, blade, sandpaper etc. Chris-Craft's 21" Monterey Cabin Express Cruiser at $3.95. Chris-Craft's 17' Speed Boat at $3.95, Chris-Craft's 18 foot Express, 18" long at $3.95. Chris-Craft's 14' Hornet runabout, 17½" model at $3.95. The new 16" "APACHE" conventional step hydroplane at $2.95. Chris-Craft's 28' Cruiser, 25' Express, 21' Sportsman, 21' Express now show outboard motor installation as well as inboard. WRITE for literature on 18 boat construction kits —$2.95 to $9.75, sixteen-inch to thirty-five-inch models.

DUMAS PRODUCTS
2114 S. Alvernon, Rt. 8, Box 953, Tucson, Arizona
1944—World's largest manufacturer of power boat kits—1954

HOBBY

Quiet, please! It's now possible to comply with that request with the new Froom mufflers. These only fit motors which have exhaust stacks. The muffler is small—⅞ inch diameter and 3 inches long. Installation is easy. Muffler model #M1 is for the smaller engines which covers about ⅔rds of those now on the market; #M2 is for larger engines including the Fox. Retail price is $1.25.

Silloo Art is an entirely new method for painting in oils by Silloo Art Co., Herkimer, N. Y. Not a numbered outline picture; with Silloo you lay in color masses like a skilled artist does, developing your painting from contrasting lights, shadows and colors. $2.98 set has all materials to complete painting ready for framing including 12" x 16" plastic art panel, brush, oil paints, framing mat.



True proportional control is what Curtis Machine Products Co., 2100 Richmond Terrace, Staten Island 2, N. Y., says its PRC-100 offers. Features self-contained power supply. Eight feet of rubber cable supplied. Sold for $19.95 with guarantee. For more details the maker invites you to write directly to him at address given above. Mention ATH when writing any advertiser.

Jim Walker
Firebaby Biplane

Stunts like a dream and has power to spare. Royal Spitfire engine has Jim Walker "Supercharger" modification for greater power, instant starting, fuel economy. Buy it ready to fly. All parts finished, painted, fuel-proofed. Span 19 in., wt. with motor 4½ oz.
Complete with engine..... $9.75
Without engine 3.50

A-J AIRCRAFT CO.
1166 N. E. 31st Ave., Portland 12, Oregon

Fly Safely

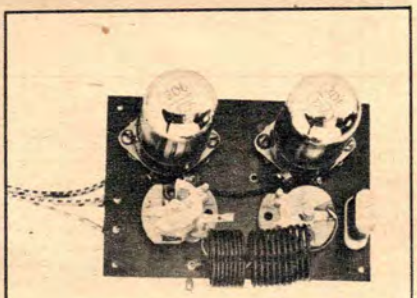
- IF YOU FLY CONTROL LINE MODELS, don't stand within 500 feet of any power, phone or light lines!
- IF YOU FLY FREE FLIGHT MODELS, don't permit autos or spectators within 500 feet of your take-off site!

MODEL AVIATION SAFETY COUNCIL

SHOWCASE

Suppliers' Mart is the Hobby-Homecraft Directory. It should have great appeal to professional hobbyist, or those who want to go into a money-making spare time hobby. Sells for $1 from Lewis F. Turley, 1027 N. Main St., Sidney, Ohio. Says Mr. Turley, "This book places at your finger tips names, addresses and listings of products. This is strictly a directory." Covers many hobbies.

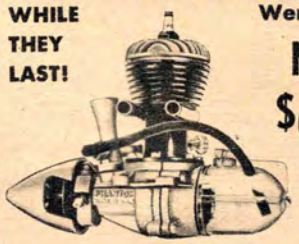
Esscox RCX Fiver by Electronic Specialty Supply Co. is compact high power 2-tube 5-watt input packaged RF transmitter for crystal-controlled 27.255 mc R/C operation. Assembled, wired to printed circuit with tubes, crystal and keying switch, $15.95—you supply case. In 5 x 6 x 9 inch case with 9½ ft. sectional antenna, $24.95. Parts kit also from ESSCO, 58 Walker St., NYC 13.



Prop charts showing what size propeller to use for the average engine-and-airplane combination are yours for the asking at your dealer's where you see Top Flite and Power Props display. New sizes in these two lines are as follows—Power Props: 4.5/6, 4.5/7, 5.25/6, 8/4, and 8/5. New Top Flite prop sizes are 7/3, 8/5, 9/5, 9/7 and 10/5. First figure is dia., second is pitch.

SACRIFICE SALE!
PRIZE WINNING
MODEL AIRPLANE ENGINES

WHILE THEY LAST!



Were $14.95
NOW
$6.95
postpaid

3 For $17.50 ppd.

We have a sacrifice lot of 3,000 Phantoms—the last lot which will ever be made—A-1, brand new, perfect. Guaranteed to be the .29 model which sold for $14.95 and won 2 national championships. Complete with operating sheet, decals, condenser, Smith (Firecracker) coil and lead wire. Order today, send check or M.O. Ironclad money-back guarantee—return in 10 days for full refund if not satisfied! Dealers Inquire.

THE AKRON
93 AKRON BLDG., 4379 SUNSET BLVD.
LOS ANGELES 27, CALIF.

RADIO CONTROL

TRANSMITTER, Crystal controlled for 27.2 MC, with tube and 0-50 Milliammeter $27.00

RECEIVER, for 27.2 MC. Factory assembled and tested. Complete with Sigma relay and tube..... 18.50

ESCAPEMENT, Rubber powered, Self Neutralizing 4.00

0-50 Milliammeter 2.50

R.K.-61 tube..... 4.00

INSTRUCTION MANUAL
with complete circuits, diagrams & directions for flying model airplanes by Radio Control. *Price Postpaid.* Send for Free Catalogue. **50** CTS.

RADIO CONTROL HEADQUARTERS
Belmar, New Jersey

33⅓% TRADE IN ALLOW.

1. Send in a trade-in, any make, any condition, and get ⅓ off on any of the engines listed below. Send check, money order or C.O.D.
2. NO KIDDING—extra nice or unusual engine trade-ins bring much more. INQUIRE!
3. USED ENGINES—next four listings for 10c.
4. All engines listed below are absolutely new (never even been in showcase) and fully guaranteed.
5. Orders, acknowledgments, replies—24-hour service.

AMCO 350 BB .21 cu. in.

ENGINES	LIST	LESS ⅓
Atwood Cadet	3.95	2.64
Atwood .049 FF	4.75	3.17
Atwood .051 FF	5.50	3.67
Atwood Triumph	18.00	12.00
Atwood Outboard	9.75	6.50
Atwood Inboard	5.50	3.67
Elf Twin Glo	21.50	14.34
Elf Four Glo	45.50	30.34
Elf Four Ign	49.50	33.00
Fox 19	12.50	8.34
Fox 29	14.95	9.97
Fox 35	14.95	9.97
Fox 59	22.50	15.00
K & B Infant .020	5.50	3.67
K & B 15	10.95	7.30
K & B 15 2S	11.95	7.97
K & B G.T. 29	15.95	10.62
K & B G.T. 32	15.95	10.62
K & B 19	13.95	9.29
K & B 19 2S	16.95	11.22
McCoy 9	7.95	5.30
McCoy 19 Sport	9.95	6.62
McCoy 19 R. H	12.95	8.62
McCoy 29 Sport	11.95	7.97
McCoy 29 R. H	16.95	11.22
McCoy 60 R. H	24.95	14.97
O. K. .049 B	4.95	3.30
Dyna Jet	35.00	23.33

All disp. Cu. In.	LIST	LESS ⅓
O.K. Cub .099	6.95	4.64
O.K. Cub .074	5.95	3.97
O.K. Cub .19	8.95	5.97
O.K. Cub .14	8.95	5.97
Space Bug	6.95	4.64
Thermal Hopper	6.95	4.64
Veco .29 or .31	14.95	9.97
DIESEL ENGINES		
McCoy .049	5.95	3.97
McCoy .099	7.95	5.30
O.K. .075	7.50	5.00
O.K. .049	5.95	3.97
FOREIGN ENGINES		
David Anderson .15	13.95	9.29
Elfin .099	10.95	7.30
Elfin .15	11.95	7.97
Amco 350 BB	16.95	11.22
Amco 350 PB	14.95	9.97
Super Tigre .15	16.95	11.22
GOOD USED ENGINES (No Trades)		
Forster 99 2 Speed	11.95	
Allbon Javelin	4.95	
McCoy .049 Diesel	1.95	
Atwood Triumph	6.95	
Dyna Jet	19.95	
O.K. Cub .049	1.15	

FAST ENGINE EXCHANGE, BOX 821, WARREN, OHIO

MOST BEAUTIFUL OF ALL PROFILES

CIRCUS PRINCE
CIRCUS PRINCE
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EASIEST IN ITS CLASS TO BUILD!!!

COMPLETELY PREFABRICATED! 27" Span A-B only $1.95

CIRCUS KING

$2.95

OUR PLEDGE

- NO KIT CONTAINS BETTER MATERIALS!!!
  - ALL BALSA GRADE AAA!
  - HARD BALSA HAND SELECTED FOR ALL STRESS AREAS!
  - TOUGH PLYWOOD PARTS!
  - HEAVY GAS MODEL SILKSPAN
- NO KIT CONTAINS BETTER WORKMANSHIP!!!

P. D. Q. PRODUCTS CO.

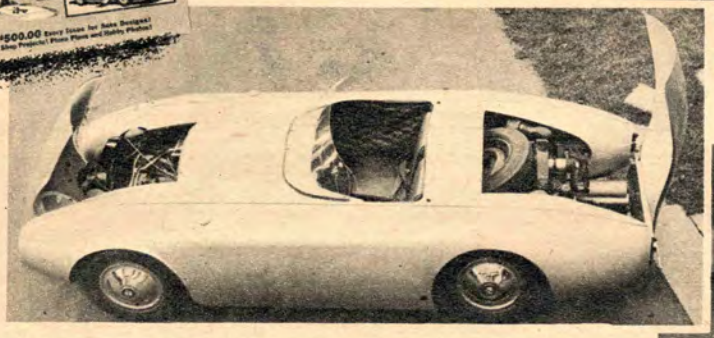
KING OF STUNT
A LION TAMER IN COMBAT 40" CONTROL LINE MODEL; CLASS B-C

P. D. Q. PRODUCTS CO. MILLVILLE, N. J.

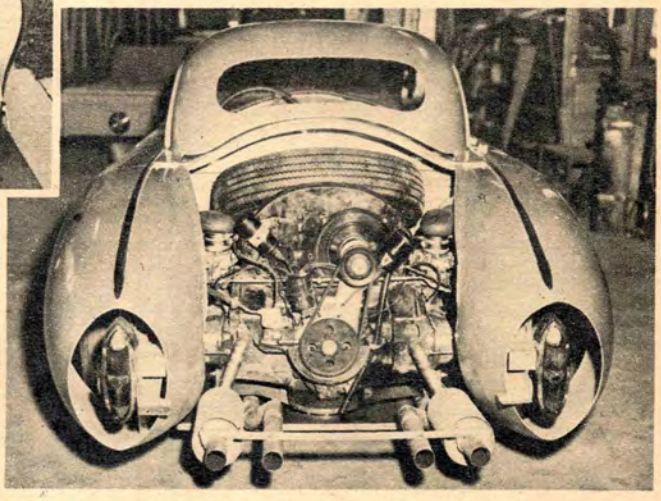
COVER STORY:

Twin Propelled Copter and Car

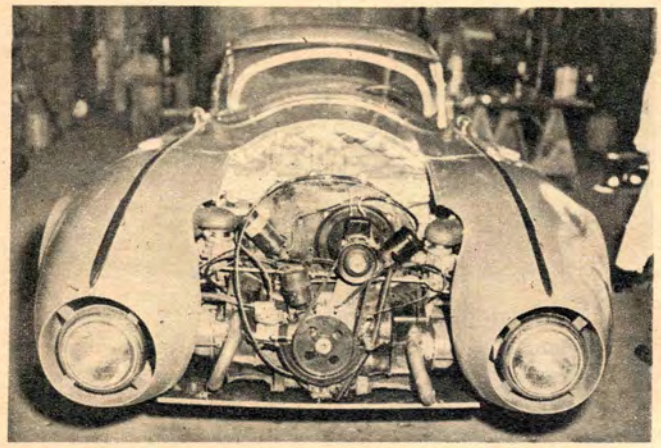
Mr. Fageol, behind the wheel, is also a designer and racer of speedboats. Holds several world records for unlimited class boats. Was engineering consultant for "Slo-Mo-Shuns."



Sleek competition sportscar gracing this month's cover is Fageol-Twin-Engine-Porshe, designed, built and driven by Lou Fageol, head of Twin-Coach Co., Kent, Ohio.

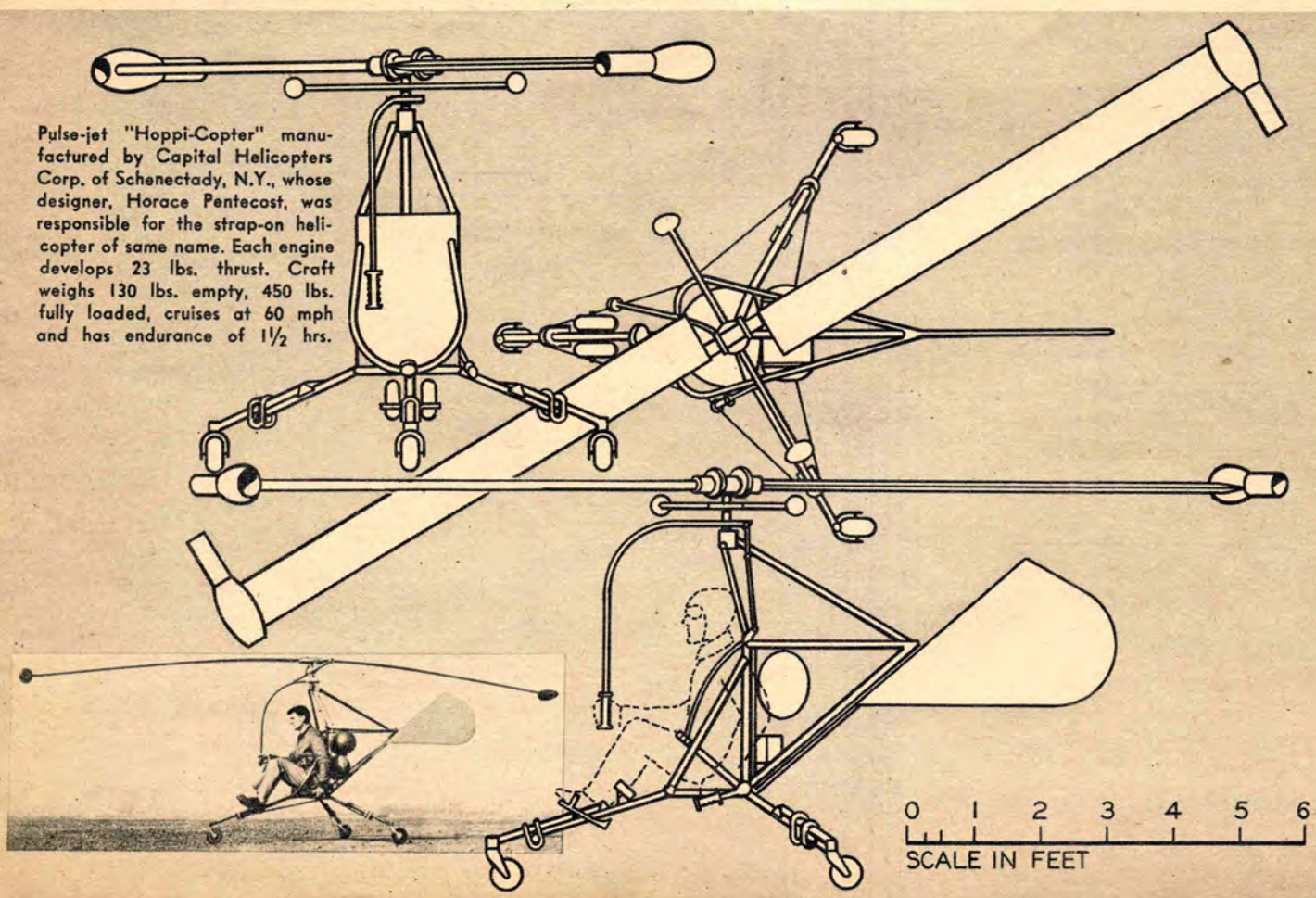


Rear view of car (above) shows installation of aft Porsche, flat-four air-cooled engine; pair produce total of 144 hp. Each engine has separate clutch and transmission interconnected so only one pedal and one shift lever are required to change gears.



Forward engine (left). Openings around headlights admit air to cool brakes. Car weighs 1650 lbs.; has demountable solid top. Maximum speed, 130 mph. Only door is on right (shown transposed on cover).

Pulse-jet "Hoppi-Copter" manufactured by Capital Helicopters Corp. of Schenectady, N.Y., whose designer, Horace Pentecost, was responsible for the strap-on helicopter of same name. Each engine develops 23 lbs. thrust. Craft weighs 130 lbs. empty, 450 lbs. fully loaded, cruises at 60 mph and has endurance of 1½ hrs.



YOU ASK... *we answer*

Send your questions to Air Trails HOBBIES For Young Men, 304 East 45th Street, New York 17, New York

Error on Koken . . . On the chart on pages 74-75 of the 53/54 issue of Air Progress there is some info that is the most cock-eyed piece of *mis*-information I, for one, have ever read. You very boldly state that the Japanese Koken plane covered a distance of 7,239,589 miles in the period of 62 hrs., 23 mins. Did you take the time to figure out that the speed of the plane in that case was over 100,000 mph, or is it just a misprint? If so what was the actual distance and/or time?

I would also like to know if the Curtiss XP-55 (page 46 of same issue) was not the one that, in either '43 or '44 crashed at an Air Force Day Demonstration at Wright Patterson A.F.B., Dayton, Ohio. The plane I have in mind developed mechanical difficulties, went into a power dive and crashed, killing the pilot and several spectators.

Dean F. Wray, Houston, Tex.

• This was a typographical error. The distance flown by Koken was 7,239.589 miles. The time was 62 hrs. 23 min., average speed approximately 115 mph.

As far as we know the P-55 was the airplane that crashed at Wright Field during a public demonstration.

Custer Channel Wing . . . I read with interest about the Custer Channel Wing Executive transport and would like to know if you could send me the address of the Custer Channel Wing Corp.

Perry Huntoon, West Orange, N. J.

• The Custer Channel Wing Corp. is located at Route 4, Hagerstown, Md.

Airline Stewardess . . . I have been reading considerable literature about the work of an airline stewardess. I am very interested in becoming one on completion of high school next spring. Would you kindly send me information telling how much college training I will need and a school I could go to, to obtain it? We have a Junior College in our city. Would it be possible to obtain part of my training here?

Mariane Sather, Estherville, Ohio

• Most airlines require at least one year of college education, or three years of business experience with ability to meet people; preference is usually given to Registered Nurses. Suggested subjects to study in college are Speech, English, Hygiene or Physiology, Psychology, Sociology, Home Economics, Foreign Languages and Music or Art. Any recognized college is acceptable to the airlines.

Color for MiG-15 . . . I am making a solid model of the MiG-15 using the Polish insignia. What was the color (if painted) of this plane?

Thomas Wilk, Lilly, Penna.

• The MiG-15 is finished in natural aluminum, highly polished. Insignia are white and red squares.

Anybody Got a P-6E? . . . Perhaps you can give me the answer to a question that has been in my mind for a long time. What has happened to all the P-6E's? One still sees WW I planes flying. I have seen an SE-5, and you have a story on the TM S-4C Scout in this issue of Air Progress. I know there are others. You state that there were still some around in 1941 (P-6E's), and yet in all of my travels with the Air Force, and as a private pilot, I have never seen one—and I have been on the look-out for them.

If you know where one might be, I'd sure like to know about it. Seems to me it would make a mighty fine personal plane.

Possibly there are plans still available for this plane somewhere. Have you any ideas?

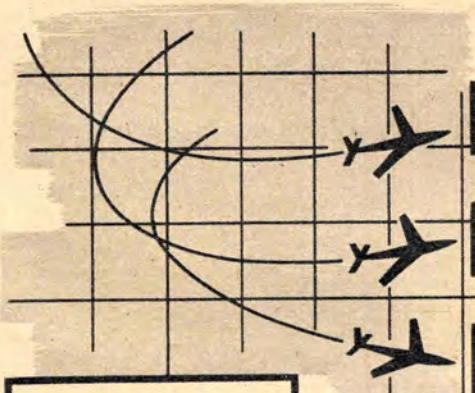
Capt. John C. Macgill, Travis AFB, Calif.

• The Curtiss P-6E, unlike the other planes you mention, was never put on the surplus list, and extremely few of them ever fell into the hands of civilians.

When they outlived their usefulness they were surveyed (scrapped) by the Army Air Corps.

CHOOSE YOUR PLACE IN AVIATION

with Embry-Riddle — Univ. of Miami training



FOR TOP POSITIONS

FOR HIGH-PAY ACTION

FOR IMMEDIATE SECURITY

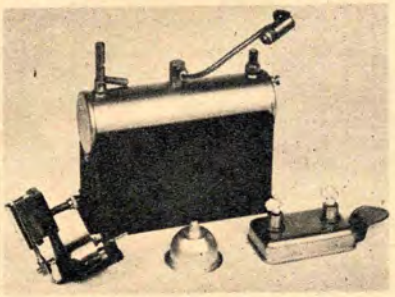
Embry-Riddle International SCHOOL OF AVIATION
MIAMI 30, FLORIDA
TRAIN IN MIAMI...AIR CAPITAL OF THE WORLD

You'll find success on the ground or in the sky with Embry-Riddle—oldest and best known name in aviation training. Accelerated 1 to 4-year courses give your career the fastest possible start . . . thorough, practical, up-to-the-minute training assures complete proficiency, eliminates non-essential study. Act today to live, train and play in South Florida's perfect year-'round climate. Write for complete information now!

MAIL THIS COUPON TODAY! — TRAINING AUTHORIZED UNDER G. I. BILLS

I am interested in . . .	TOP POSITIONS are goal of joint Embry-Riddle-University of Miami 2-yr. Business-Pilot (flight and technology), 4-yr. Aviation Administration (BBA degree in management), and 2-yr. Design and Technology (includes engineering drafting) courses. There's no ceiling to advancement for qualified men!
☐ Business-Pilot ☐ Aviation Administration ☐ Aero Design and Technology	
☐ Private Pilot ☐ Commercial Pilot ☐ Instrument Rating	HIGH-PAY ACTION for men who want to move fast awaits Embry-Riddle trained pilots. Best instructors, up-to-date aircraft, superb year-'round flying conditions, backed by 28 yrs. experience training today's aviation leaders.
☐ A & E Mechanic ☐ A & E combined with Private Pilot ☐ A & E combined with Commercial Pilot	IMMEDIATE SECURITY at good pay assured. Embry-Riddle accredited technician graduates are sought by entire aviation industry. Learn fast with modern equipment including jet... live aircraft. Combination training provides double opportunity for airmen with dual pilot-technician ability.
DEAN of ADMISSIONS Dept. 97 EMBRY-RIDDLE SCHOOL OF AVIATION MIAMI 30, FLORIDA Please send immediately illustrated catalog and full details on courses checked above.	*Please Print* Name _____ Address _____ City _____ State _____ Age _____ I am a (check one) ☐ veteran, ☐ non-veteran.

STEAM ENGINE FOR MODEL BOAT



DEALERS INQUIRIES INVITED

Steam Plant suitable for driving model boats up to 28" in length. Safe, fitted with safety valve; easy to start, just fill lamp with alcohol and the boiler with tap water, starts within five minutes after lighting burner. Runs for twenty minutes.

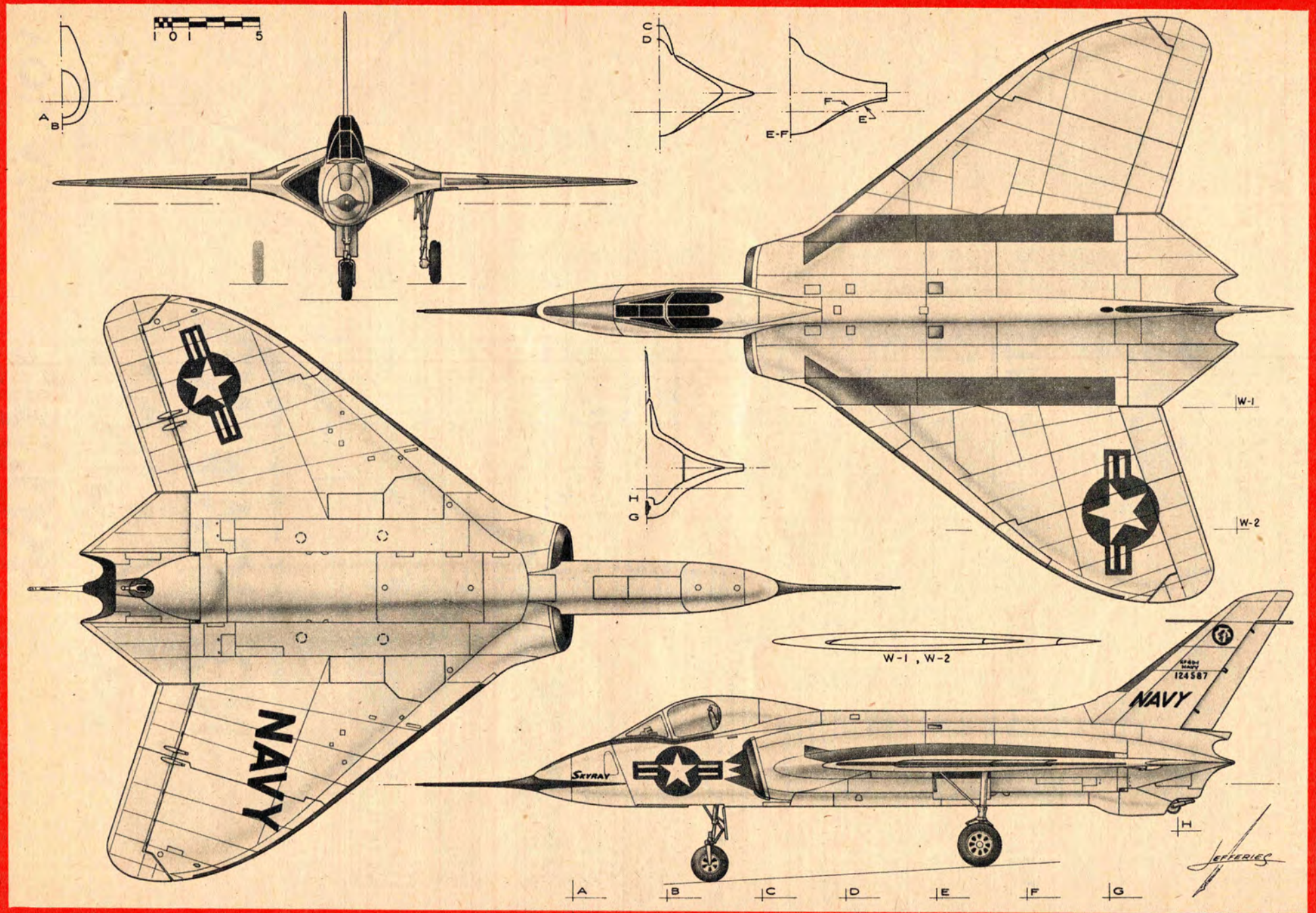
ENGINE: Single cylinder, single action, oscillating type. Light weight, precision made, very powerful, built to the highest standards of polished and cast brass. Drive shaft is of steel. Size of base: 1⅜"x1¼". Height: 2⅛". Net weight: 6½ ozs.

BOILER: Strongly constructed, fitted with base, whistle, safety valve, and filler cap; two burner lamp, and funnel supplied with unit.

Oil reservoir fitted in steam pipe line. Total weight of steam plant 1 pound.

Price including postage $11.95 NO C.O.D.

ALLYSON COMPANY BOX 115 BREVOORT STATION BROOKLYN 16, NEW YORK



DOUGLAS XF4D-1 *Skyray*

Official holder of world's speed record over 3-kilometer course at an average speed of 753.4 mph, the Skyray is Navy's first carrier interceptor with delta-like wing shape. Douglas does not call the XF4D wing a delta, claiming that it actually is a highly swept form with interfuselage gap closed up. Plane is now in production, "X" prefix dropped.

AIR NOTES

THE WORLD'S SOARING Championship will be held in England July 20 to August 4. Twenty countries to be represented. U.S. entries are National champion Paul MacCready, Stanley Smith, Paul Schweizer and Clarence See.

BELL Aircraft Corp. developed special auto-pilot for its HSL-1 anti-sub helicopter. System permits automatic stabilization during long periods of submarine search under all-weather conditions. Can be used on other helicopters as well. . . . JAPAN'S Kawasaki Aircraft Co. acquired rights from Lockheed for production of F-94C Starfire all-weather fighters and T-33 jet trainers.

SEVEN types of military cargo aircraft will make change to turboprop engines. . . . WRIGHT Turbo Compound aircraft engine upped power rating from 3,500 to 3,700 hp. . . . FIRST military pilot to log 1000 hours on B-47 Stratojet, Major Donald G. Prieve of MacDill AFB, Fla., flew 500,000 miles.

MATS (Military Transport Service) achieved perfect safety record during 1953, airlifting 500,000 passengers and patients without single fatality. . . . PLATTSBURG, N.Y., site of new $70 million Air Force jet base. Will comprise 4,000 acres manned by 7,000 men. 100 jet bombers, probably B-47s, will be based there.

CONVAIR XF-92A and Northrop X-4 research airplanes retired from service; will be exhibited at Wright-Patterson AFB Technical Museum. . . . BOEING B-47 increased take-off power by 15 Jato units. Total now 33, giving the ship 33,000 lbs. of extra thrust for assisted take-off.

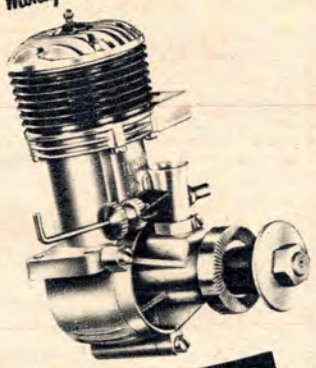
ALLISON Division of General Motors has built over 25,000 jet engines since entering reaction propulsion field in 1945. . . . SUPER CONSTELLATION "Deutron" of the Royal Dutch Airlines (KLM) flew 3400 miles from New York to Amsterdam in 10 hrs. 14 min. . . . N.Y. UNIVERSITY now offering engineering course in helicopter theory; class open to all engineers, meets every Tuesday evening.

CONVAIR'S Vertical-Take-Off fighter XFY-1 shipped to Moffett Field Naval Air Station near San Francisco for "tethered flight" tests. . . . ARMY guided missile labeled "most unbelievably fantastic" weapon by Representative F. Edward Hebert (D-La.). Once launched at enemy plane, "There is no escape," he said. . . . POWDER PUFF DERBY (All-Woman Transcontinental Air Race) for July 3 to start from Long Beach, Calif. and end July 6th at Knoxville, Tenn. . . . BEECHCRAFT T-34 Mentor trainers to be built in Canada for the RCAF.

SPECIALIZED training for air and ground positions in air transportation available to civilians and Korea War GIs by Taloa Academy of Aeronautics, Oakland Municipal Airport, Oakland, Calif., a division of Transocean Air Lines. 1400 students from 10 nations trained since its founding six years ago. Courses include instrument, multi-engine, airline transport ratings and aircraft dispatcher and flight engineer.

the Best Deal Yet!

"The Finest Money Can Buy!"



FORSTER ENGINES
MODEL F-29 or F-31
$11.20

WE'RE OFFERING EXTRA-GENEROUS TRADE-IN ALLOWANCES!

To clear the flying fields of worn out, balky old engines — to give thousands of modelers a fresh start with a truly top quality engine, we make this sensational offer:

Mail your old engine to us, no matter what make, size or condition, even though some parts are missing! We will allow you $5.00 for it in trade towards a brand new FORSTER front rotary valve engine! Your old engine and only $6.20, plus 35c for postage and handling, will bring you the latest and best model F-29 or F-31 FORSTER engine, made by the oldest established model engine manufacturer in the U.S.A. and known the world over for outstanding precision, performance and fuel economy.

This is a limited offer, good at the factory only! Mail your old engine today. The new engine of your choice will be on its way to you promptly. Write us for free descriptive literature.

it's trade-in time for a better deal!

YOUR ENGINE IS WORTH MORE ON A NEW "FORSTER"—NOW!

FORSTER BROTHERS 8 E. LANARK AVE., LANARK, ILL.

where quality comes first

New! WORLD'S LARGEST GAS MODEL BOMBER B-25

67" Span. Length 49". "U" Control, Radio Control, or Free Flight

This 1" scale model can't be told from the real North American B-25 Bomber. Features of the construction set are 3" scale rubber tired alum. disc wheels, 4¼" alum. cowls, planked type balsa fuselage, ready cut tail and rudder balsa, alum. guns, all parts, and full size drawing. For easy handling of this model, the outer wing panels are removable, reducing the wing span to 30". Two OK 14 or 23" type motors can be used. Const. set, postpaid..... **$20.00**

9' TAYLOR CRAFT GAS MODEL

9 foot span. Can use Radio control. Set has 36 ready cut wing ribs, cut plywood body formers, 16" carved prop, tail wheel unit, 2 full size plans, printed balsa, silkspan, etc. Uses "C" type motor, single, twin, or 4 cyl. motor. Set without motor or wheels, postpaid..... **$17.50**
Extra pair of 4½" airwheels, $3.00

Grumman-F3F1

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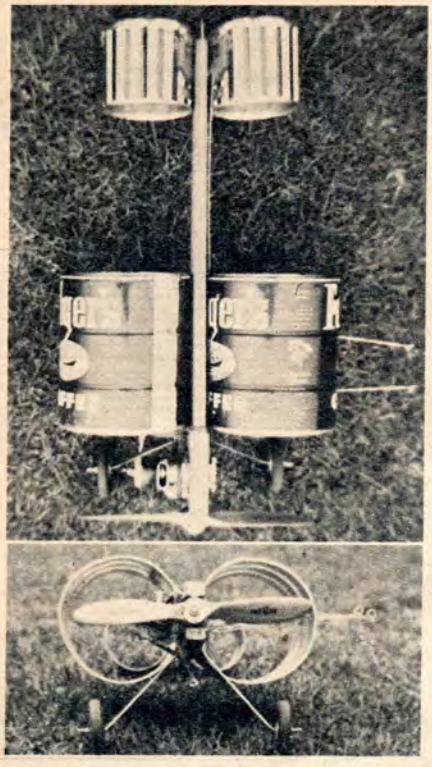


Gary Patmor's twin-coffee-can Ukie: "Flies fairly good, but glides like an anchor!" Peanut tin elevators, left pivots. 9/6 prop, O&R .23. Don Barnhart co-designed (?).

Rumpler Taube free flight scale by G. H. Berry, Vancouver. English .46 cc. diesel originally used a Baby Spitfire. ATH plans.

From Hamilton, Ontario: Original Delta wing control line by Merwin Fortney. Semi-scale Sea Dart, powered by two Dyna-Jets, built by Richard and Harold deMontfort, twins. "Very fast!" says Don Gardineer.

■ We had to wait a long time, but somebody finally came up with an endurance event for control line plane models. Guess who? Pan American World Airways! Thank goodness for PAA, George Gardner and Dallas Sherman. Official title for this type of how-long-can-you-keep-it-in-the-air flying is "PAA Load Endurance Event for Control Line Models."

The new category was first scheduled for the ninth Mirror Model Flying Fair in NYC. After a few shakedown tests Pan-Am may find some changes in order, but at this moment let us give you a run-down on just what type of models can compete for the endurance record and how flights must be accomplished.

Entries must be control line whose gross take-off weight (model, payload and fuel) must not exceed 7 pounds. Only one engine permitted and that cannot exceed .29 cubic inch displacement. You can't use any launching aid such as jet assist or catapult; each entry must take off under its own power within three laps. Model must take-off and land on its own attached landing gears—no dolly take-offs, sorry.

Sixty-foot lines are required. Entries under 5 pounds can be flown on .016" lines; for total all-up weight of over 5 pounds lines must be .018" in diameter. Each flyer must use a safety thong and entries are subject to all A.M.A. safety regulations.

Now—about that payload. Not less than 3 pounds of payload must be carried within a closed compartment. You furnish the load; it can be of any material, but it must be easily removable for weight checking purposes. Then the regulations get pretty specific and we'd better quote them:

"Except for weight and balance purposes, the payload shall not be used in any manner to influence the operation of the model, nor to contain or support any part of the model or its accessories. Cargo shall be securely stowed in such a way that it cannot leave model during flight and the judges' decision as to safety or arrangements for carrying payload shall be final."

No team entries; only one contestant can fly any one entry. Your entry must carry on take-off all fuel used in flight. It must remain in flight at an average altitude above the height of the controlling hand of the contestant. Each payload endurance job must land and come to a complete stop without dislodging the payload from its compartment, or the payload compartment from the model.

You get three minutes in which to get airborne, or back to the bottom of the list with you, lad. As for scoring, say Messrs. Gardner and Sherman: "Model remaining in flight for the longest time from take-off to time of next touching the ground, is the winner."

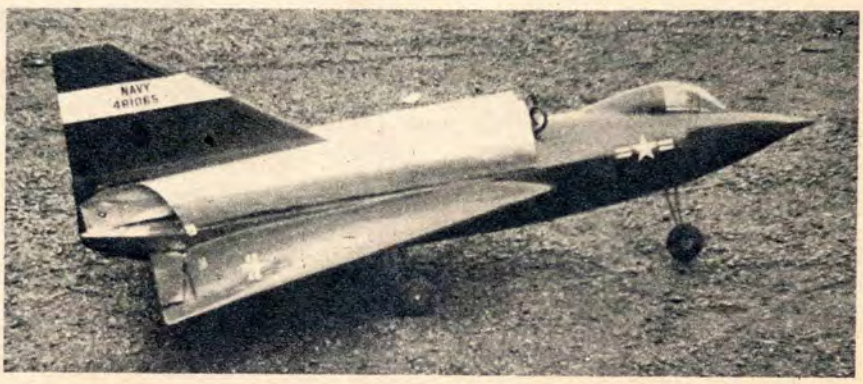
First reaction by some Eastern experts is that the initial rules will produce models so large it'll be a real chore to guide them around a circle while the motor drones on and on. More of a test of the modeler's endurance, say they. But most everyone we've checked with applauds the idea that all fuel used must be carried by the model at time of taking off.

If your club would like to run off an endurance event or special demonstration in conjunction with some public affair, why not contact the folks at Pan American for suggestions. Best bet is to write George Gardner, Educational Director, Pan American World Airways, 28-19 Bridge Plaza North, Long Island City 1, N. Y.

Rule-less Event. Nothing could be simpler, no regulations are required. Sounds like the perfect contest, doesn't it? Only in England would they add a category like this to the official Air-Model Nationals. Glad to report that entry fees go toward the international contest team fund. It's called a "Sealed Time" contest. On each of the three days of the British Nats there'll be a special event in which everyone, regardless of the type of model he prefers, can take part. Object is to hit or come closest to a "sealed time" which will be unknown until the end of the flying day. Any flight in any contest, or a special flight, may be entered on payment of registration fee. All entry fees—with no deductions—go to the Wakefield and International Competition Fund. Prize each day is a solid gold PAA Load Bulova watch donated by Pan American World Airways!

Kiwis to Guillow. All rights for manufacturing the Kiwi A/2, A and ABC free flight gas model kits have been taken over by the Guillow concern from K&B Mfg. Lew Mahieu designed the Kiwi; prefabbed, the kits contain rubber wheels and preformed landing gear wire. Specs on the A/2 are: span, 35 inches; wing area, 200 sq. in.; recommended engine, .049 cubic inch displacement. Kiwi "A": span 48"; 375 sq. in. wing area; .14 to .19 engines. Data on the ABC Kiwi will be announced later.

Western Roundup. One form of competition enjoying a new-found popularity on the West Coast is the team challenge meet. The WAM (*Continued on page* 67)



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Standard of the Model World

Everything Under Control

News, Views, Comment on Radio Control Planes, Boats, Vehicles by Howard McEntee

Forrest Cole caught Al Dinison in action at Fulton County Airport at Atlanta, Ga. Al is launching his Live Wire Senior.

Do We Need More R/C Frequencies? We have been operating on the 27¼ mc. spot for about two years, and on 465 for somewhat longer. During that time, R/C has expanded tremendously, and some builders feel it may be time to see what can be done to get us some more space in which to operate. The F.C.C. certainly will not even consider this, unless there is a healthy outcry from those affected—which means you R/C operators. So if you feel that the time has come, why not drop a line to the Commission and state your views? The address is Federal Communications Commission, Washington 25, D. C. (Don't send your letters to the local F.C.C. offices—write to *headquarters.*)

There are several possibilities; for example, there are "diathermy bands" at 13.56 mc. and 40.68. The entire diathermy band near the 27¼ mc. R/C spot covers from 26.960—27.280 mc.; many other countries allow R/C operation in this full range, which means that two and possibly even three R/C outfits could be worked at one location simultaneously. We see little chance that the provisions for crystal control and for a 5 watt maximum input power will be lifted, and in fact, we don't think they should be. If any readers have views on this problem, put them on paper and shoot them off to the F.C.C.; your ideas will carry special weight if you can get your R/C club or group to write as a unit, on club stationery.

Do *you* think things are getting jammed up on 27¼? OK, then, make your views known to the one body that might be able to help you—the F.C.C.

The practice of exchanging movie films and even picture slides between various R/C groups seems to be increasing, and such films, even though they may not be of professional quality, have been found highly interesting. It has been suggested that ATH might act as a sort of Film Exchange, through this Column, and we will be happy to do so. But *don't* send your films to us! Just let us know what you have, your address, etc., and we'll print the data here, so that others may contact you directly. We understand that both 16 and 8 mm. films are being exchanged, as well as 35 mm. slides. On exchanges, it is customary to pay the postage one way; if it is not an exchange deal, it is only fair that the recipient pay all the postage involved. Films should be insured, and of course, handled with the utmost care while they are in your possession. Projectors are quite cheap to rent, if you can't locate one in your group.

It has been suggested that we omit lengthy reports of contest winners from this Column, as well as elections of club officers, all in the effort to save space which can be devoted to matters of interest to more of our readers. We will note here any coming contests (or put them in the general Hobby Calendar which appears in each issue) provided they reach us in time to make an issue that is published a few weeks before the scheduled contest date. We'll continue to print notes on new R/C clubs or groups, flying sites, general news, etc. O.K.?

Nate Rambo (113 Cricket Ave., Ardmore, Pa.) writes that the Golden Eagles and the Bucks County Federation held an informal R/C gathering and had about 90 enthusiasts in attendance. There were movies, refreshments, and a display of new and unusual R/C apparatus. Nate sez there were some "real nervous-looking ships" on hand. The Golden Eagles include all sorts of flyers, but specialize in F/F and R/C; they fly at Piasecki Field, Morton, Pa.

A fine report on flying at Turlock, Calif., received from Pacific Radio Control Society; one contest brought out 33 entries, and was flown in two classes—rudder only, and rudder and elevator. AMA rules were used, but no points were given for spot landing in the stunt pattern. Twenty-three entered the rudder-only class (some fellows with elevators taped them up, so they could get in this group). Flying Ohms were most numerous, while Dale Root had a Comet Clipper. Mac MacKerrecher entered his speed job, made a beautiful take-off only to stall out in the climb. The report notes tersely that Mac says he will build something more practical next time!

Howard Bonner won rudder-elevator class, using Babcock 3-channel equipment with RME. Ken Damewood had some useful notes to give on his Torp .19; he filled the shaft with solder, then drilled it out with a #10 drill. He also milled off the baffle to cut compression and slow the engine still more. Engine runs at a very consistent 9500 rpm, with lots of power. In rudder-only class, Ray Morgan won with an "Ohm."

Lot of interesting news from W. Miles Wilson (819 E. 41st St., Spokane 36, Wash.), a member of Northwest Hobby Club. Miles says an R/C group has been set up, strictly informal so far. Several of the group have taken tests for various grades of ham licenses, so they can get away from the crowded 27¼ spot. They are looking forward eagerly to the data we will have in ATH on 50 mc. versions of the Mini-Mac and the Mac-II, also to the 220 mc. outfit we have on the way.

Another new R/C club is the "Flying Sparks," operating in the Elmira-Corning, N. Y. area; we hear from Pete Bliss (47 Corning Blvd., Corning, N. Y.) that there are now 17 members, 14 of them experienced in R/C matters.

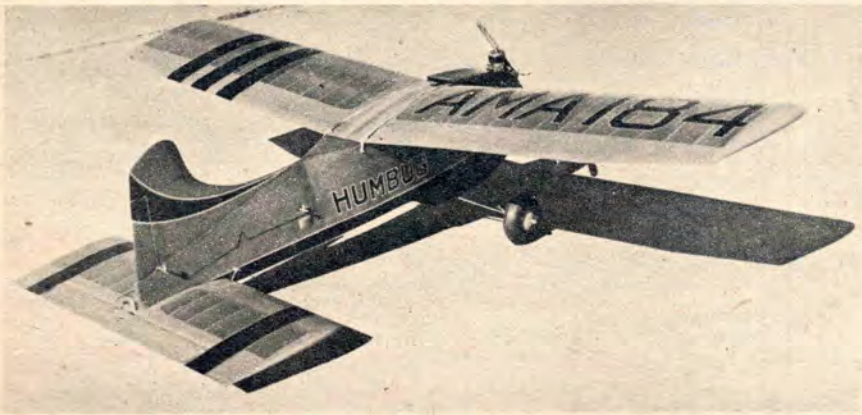
Another very hot group in upper N. Y. State is that around Buffalo, where the "Flying Bisons" hold sway; they have just secured a new flying field (32 acres in the middle of a wide open area—oh, brother!) and have converted 100% to R/C work. Will have leveled and smoothed takeoff area, a shop building at field, plenty of fencing, etc. About 25 active R/C flyers, plus quite a few kibitizers. Contact Harold deBolt (Williamsville, N. Y.) for more info.

Houston, Texas, reports in through Robert Grabowski (Box 7177, Houston 8) who says there is some activity, but nothing organized. Anyone interested in local R/C should call him at HO-23488. He and Walter Smith are planning a model with 220 mc. tone receiver; they expect to have six channels, with more added later! Bob is W5TKP.

R/C is booming in Oklahoma. Ken Oliver of the Omahawks R/C (3417 Martin Ave., Omaha) says two seasons ago there were only two flyers, last year there were about a dozen; they expect twice that for 1954. Novices are welcome at club meetings; there are 14 active flyers. Okla. trend is away from single gas tube receivers; more multi-tubers are showing up, along with audio tone rigs.

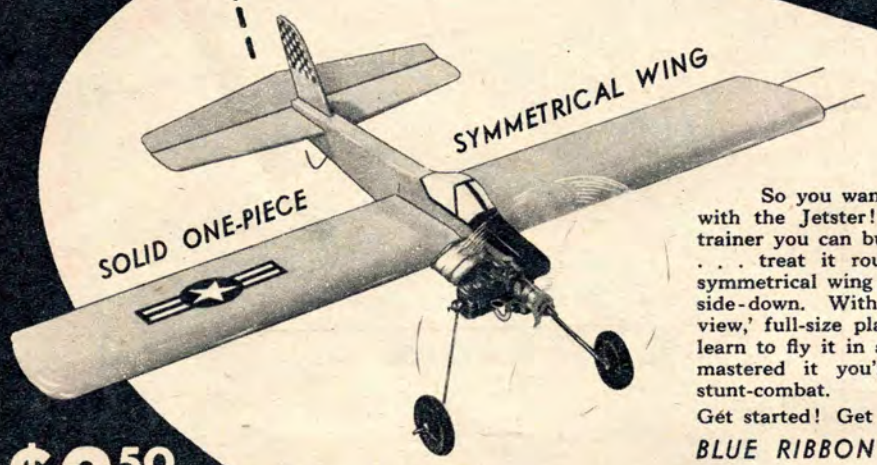
Doyle Thompson (Box 372, Guthrie, Okla.) writes of flying session at Ponca City and Tulsa. At P. C. Jim Rice and Doyle had a go (*Continued on page* 79)

Five-foot span R/C Humbug by Claude McCullough. Torp .32 power; 12 in. chord, has 700 sq. in. wing. Weight is 6 lbs. giving 20 oz. per sq. foot wing loading. Claude uses Triplex pulse control for rudder-motor-elevator (RME) action. MacNabb 465 mc. xmtr and rcvr.



CONTROL-LINE TRAINER

THE JETSTER FLIES RINGS AROUND THE OTHERS



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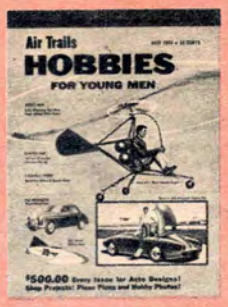

Probably no other aircraft has been responsible for as many inquiries as the jet - propelled Hoppi - Copter drawn by Cal Smith this month. The 'copter and Lou Fageol's twin-engined car are detailed on page 16.

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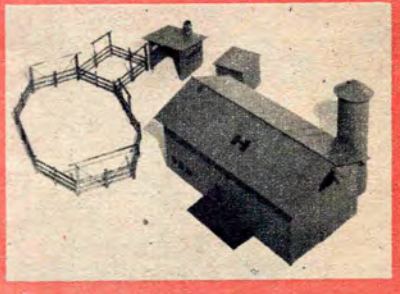
ENGINEERING

Is there a place for you in this field? Turn page to see



Real placer gold mine for some modeler . . . details are on pg. 38

Semi-scale combat kites to amaze the experts! . . . pg. 48

What's going on here? Some straight shooters at work: pg. 66

Washington Water Power Co's Cabinet Gorge Hydro-electric Development in Idaho is typical of vast new power projects here and abroad.

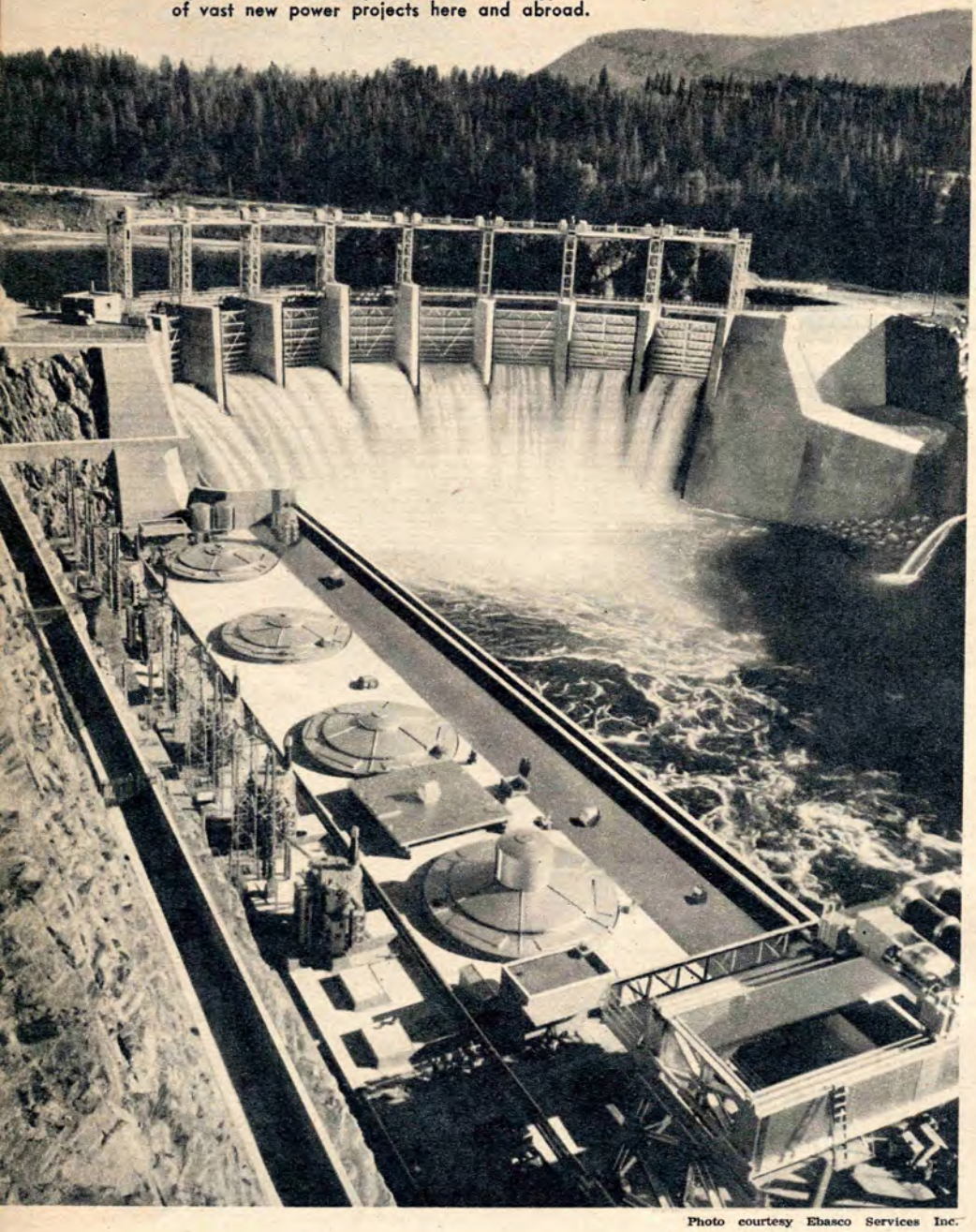


Photo courtesy Ebasco Services Inc.

What's Ahead for You in Engineering?

An "ATH" Career Survey for High School Students

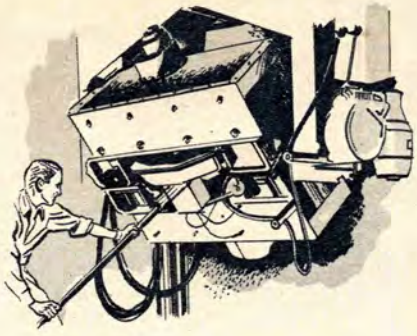
■ Never before have there been so many or such alluring opportunities as now await the young fellow who wants to be an engineer. America will be needing annually 50,000 engineers for some years to come—well over twice as many as present indications show the schools are graduating. They'll be wanted and welcomed by industry trying to meet the demands of a population increasing at the rate of a quarter of a million a month, by the accelerated defense program, by research and development work of all kinds.

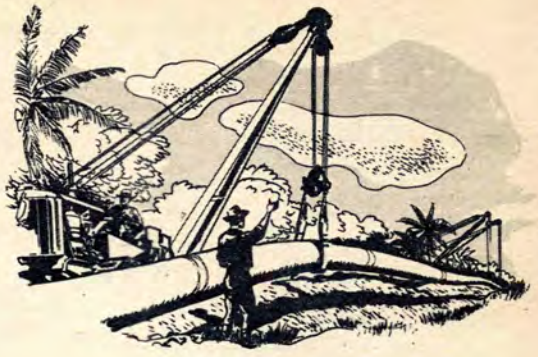
All right, you've probably heard about the shortage of engineers, seen some of these colossal, cold-sounding figures. But exactly what does it all mean to *you*—the high school student? What *kind* of opportunities will be waiting when you finally get an engineering diploma? Where will the best chances lie? And suppose you have a real urge along technical and scientific lines yet feel you possess talents in other fields as well—would engineering be your best bet?

This survey is intended to answer such questions.

Let's have a look at electrical engineering. This, of course, is one of the five principal branches—the others being civil, mechanical, mining and metallurgical, and chemical. The electrical engineer deals with the transmission of energy and speedy communications, and within these two main divisions are found the various specializations many of which offer rich opportunities in the years ahead.

It need hardly be pointed out that the development and application of television goes on apace. More and more TV is being used in industry—with the camera, for instance, recording the progress of a red-hot strip of steel from one area to another in a sheet and tin mill for a distant operator watching a receiving set. War-born radar is being put to an increasing number of peacetime purposes. Fluorescent lighting is receiving ever-wider application.





All such things naturally mean more jobs for electrical engineers. They also denote a little-realized fact which bears on engineering in general: the technological age sponsored by America is *only now* getting into high gear. In the 20 years from 1918 to 1938, the use of electrical energy for domestic purposes increased eight times. This period saw today's commonplaces —electric range, home food freezer, or dish washer—develop from lab experiment into household necessity. With population jumping and the standard of living climbing, more engineers are sought for more research to develop more new products.

In engineering circles today you hear a great deal about "nucleonics." All branches are actively interested in the study of atomic energy and how to use it—constructively. Many colleges are grouping this subject into their electrical engineering course. The "E.E." is specifically needed in the electro-magnetic separation of isotopes requiring an extensive list of electrical apparatus. R.C.A. recently announced the "atomic battery"—as yet just a long-life small battery, but a definite step toward obtaining electricity directly from atomic energy. . . . Tomorrow, when *you* get your degree, "nucleonics" will spell vastly bigger and better chances.

The utilities are among those investigating atomic energy. The whole power field is worth your consideration. In constant need of electrical engineers, this industry doubles itself every ten years. More industry in general is requiring power and long-range transmission of it is creating new jobs.

As the need for more power increases, more public utility projects will be built. Construction in this respect since the war has been on the boom, both here and elsewhere, and from indications the trend will continue. American firms are called on by "power-hungry" countries to design, supervise or build power installations. Ebasco Services, for instance, in the last few years has functioned in one or more of these ways on the first arch dam in Japan, on a hydro-electric development in northern Greece, on others in Brazil and Peru. This company, the world's largest in utility construction, is very active in this field throughout our own country.

In transportation, the electrical plant is assuming greater importance every year. In today's diesel locomotive, there is more electrical equipment than in an electric locomotive. Planes and ships are demanding far more complex electrical systems. The wider application of the gas turbine—research in their use for the family automobile has already produced results—implies lots more work ahead for the electrical engineer, as well as other types.

One of the other main branches of engineering involved in gas turbine development is mechanical. Let's consider this large and important segment of the profession in detail. The mechanical engineer is the one who deals with machinery and the power to operate it. He designs and builds engines, ships, boilers, plants for turning out machine tools, etc. His specializations include automotive engineering, aeronautical and heating and ventilating.

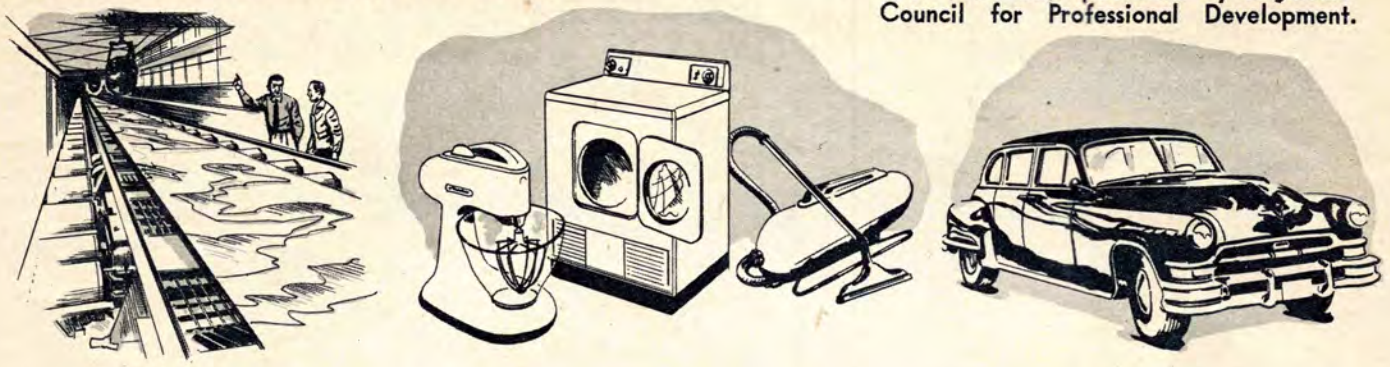
And he's the one who must design and build those gas turbines that are opening up a whole new field in powerplants. Another job area where he'll be much in demand is that new trend in American industry called "automation." Pioneered by Ford, this is the system wherein mechanical devices take the place of humans in making automatically certain choices or decisions on the basis of information fed to them in various ways. A simple example is the thermostat. Far more intricate gadgets have been installed at General Electric and duPont—the chemical industry is a natural for automation. Its increasing use will spell brand-new opportunities in the tool design field for the mechanical engineer.

"Air conditioning" is now a familiar term. Again the mechanical branch—or the heating and ventilating engineer—must design and build to fill the growing demand. With more industrial processes requiring plants with controlled temperature and humidity and "sterile" air, the mech. eng. will be needed to conceive and install the equipment. . . Likewise, the refrigeration engineer should expect

Urgent need for highway (civil) engineers. Here: bridge for "Autopista" road, Venezuela.

WHAT'S AHEAD FOR YOU IN ENGINEERING?

All drawings from "Engineering—A Creative Profession," published by Engineers' Council for Professional Development.



plenty of offers both for making the machinery involved or supervising the operation of quick-freezing food plants, cold-storage warehouses and the like

Both now and tomorrow, the opportunities for the aeronautical engineer in this country are the chance-of-a-lifetime kind if you have the qualifications. Jet power has brought about a revolution in aviation, making planes faster and more complex. New forms like the helicopter are coming into their own; others like the convertiplane and guided missiles are being developed with amazing progress. Airline routes are growing longer and more ramified, and more freight is being transported through the sky.

All this creates the necessity for more engineers. They are wanted not only by the busy airframe and engine manufacturers but for liaison by a good proportion of the 60,000 sub-contractors and suppliers of parts and accessories. In addition, aero engineers are much needed for research programs carried on by both industry and government.

Uncle Sam is the big employer in research. The largest labs of this type in the world are operated by the National Advisory Committee for Aeronautics at Langley and two other fields. At present the NACA payroll alone for this purpose contains 7,500 names. Both the Air Force and the Navy also hire civilian engineers for their own research and development programs. The AF runs half a dozen experimental stations such as those at Muroc AFB and Wright-Patterson, while the Navy has various test and development centers. Work in guided missiles by the air arm is yet another research activity.

And still in addition, the Air Force and the Navy farm out research and development to independent commercial organizations or schools like Cal Tech and M.I.T. Hundreds of millions of dollars in contracts have been awarded to these and other labs. Such organizations are hungry for engineering graduates, and will be for some time to come.

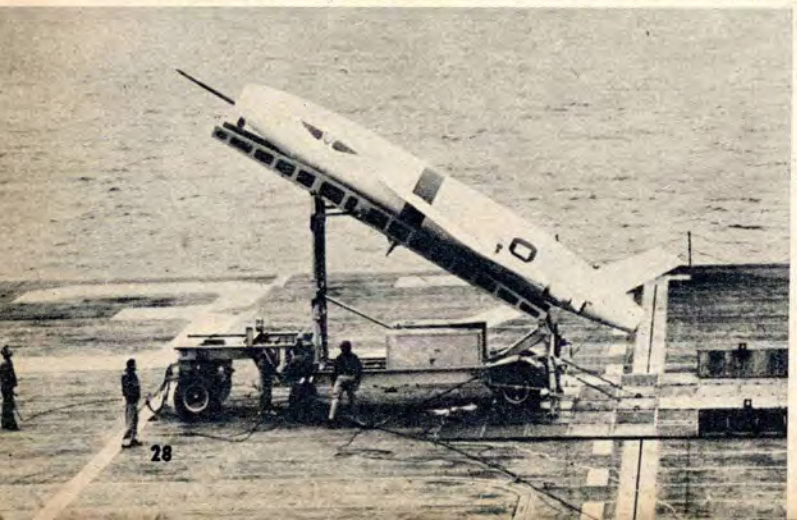
Chances are you'll jockey around a bit in your jalopy during this summer vacation. One sight you'll come across in your travels is road building. The highway program in this country is years behind schedule and one of the chief reasons is not lack of funds but shortage of civil engineers. Both federal and state commissions are pushing highway construction as fast as possible. Likewise, practically every large city has been building or is contemplating urban expressways — here the program is 10 years in arrears. And foreign countries like Bolivia and Peru are employing American engineers to help cut roads through high-mountain terrain, build bridges where nature once felt safe. . . . New oil and mine fields in South America must have accessibility.

The civil engineer, of course, is one who also designs and constructs buildings, dams, railroads, water and sewage systems, tunnels, and does all kinds of surveying. He also maintains the various installations he builds.

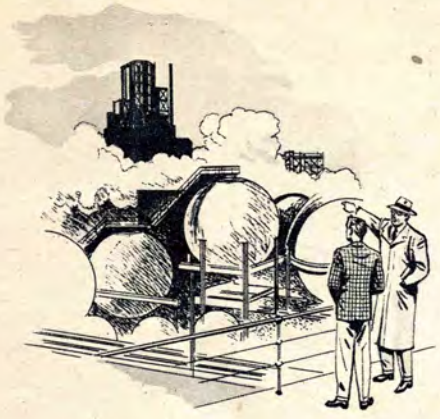
Besides the continuing critical need for the C.E. in highway engineering, there should be definite opportunities in long-range pipeline work. You've seen or read about the "Big Inch," which carries natural gas from Texas to New Jersey. Less publicized but far more extensive in use are the oil lines, such as the Platte pipeline that transports crude oil for 1056 miles from Wyoming wells in the Rockies to refineries at Wood River near St. Louis. . . . The employment of pipelines is a growing trend, and for a number of purposes.

Getting back to Peru, we quote from a report in a house organ by

Poised for firing from portable ramp of Navy carrier is Regulus guided missile. Boundless opportunities for the aeronautical engineer.



Increasing use of television in industry is only one boon for electrical engineers, as in banking operation here. Photo: RCA Victor Div.



R. G. LeTourneau, head of the famous Texas firm active in engineering projects in South America: "One day as I walked a hundred feet or so behind the Dozer cutting a trail, the native about thirty feet behind me began yelling. I had just passed within ten feet of a Boa Constrictor snake at the base of a huge tree. . . ." Well, that particular snake died, however much he may have wanted to stem the tide of progress now sweeping over his country. There is exploration and digging into the ground and heavy construction, and U. S. companies have a hand in most of it. American Smelting & Refining is planning to invest a hundred million to develop Peru's copper deposits, and Utah Construction is opening the iron deposits in the southern part. In Bolivia, too, the snakes have cause to be wary. . . . While up in Canada there's a rush on for copper, desperately needed by growing utilities, and considerable liveliness in cobalt, a prime defense alloy.

In other words, if your ambition is to become a mining engineer there should be good prospects along conventional lines in both North and South America. The big news in mining today, however, is uranium.

You've (*Continued on page* **55**)

One uranium mining hq. in Canada. Atomic energy: great chances for all engineering.

These Leaders in American Industry Say:

"The Scientific Manpower Commission estimates a shortage of 35,000 to 40,000 engineering specialists and 5,000 to 10,000 scientists in the coming year. These figures, however, do not fully reflect total shortage of scientific manpower.

"With research and development a four-billion dollar business in the United States this year, we may well contemplate what other projects might have been undertaken if scientific manpower was available.

"For a nation which is becoming increasingly dependent on fundamental research and development for its national security as well as its economic welfare, the cost of this shortage of scientists and engineers is incalculable.

"Certainly, opportunities for young men in all fields of science and engineering are brighter than they have ever been before."

—*A. C. Monteith*

A. C. Monteith
Vice-president in Charge of Engineering and Research
WESTINGHOUSE ELECTRIC

". . . With every passing year the opportunities for individual success are increasing enormously. In my lifetime I have seen the birth of the automobile, the invention of the airplane, the development of chemical synthetics and plastics, the miracle of electronics and the dawn of the atomic age with all the infinite promise it holds for the future welfare of man.

"And still science rushes on, crossing one new frontier after another, and finding, beyond each one, a whole unexplored wilderness of opportunity. . . ."

—*Benjamin F. Fairless*

Benjamin F. Fairless
Chairman of the Board
U. S. STEEL CORP.

"The future of our American scientific heritage rests in the hands of the students of today. Science is still at its frontiers, and it will be up to these youngsters to transform it into benefits for a prosperous tomorrow. To make them realize the importance of their burden must be *our* contribution to the future."

—*Ralph J. Cordiner*

Ralph J. Cordiner
President
GENERAL ELECTRIC CO.

"Research and development being conducted today give us some insight into the future, for we know that the laboratory experiments of today are the everyday products of tomorrow. . . . Here are my ten engineering problems for the future:

"1. More Efficient Gas Turbines and Other Power Plants.
"2. Power Directly from the Sun
"3. Process for Obtaining Materials from Earth's Crust and Seas
"4. Control of Corrosion of Metals
"5. Development of an Adequate Highway System
"6. Practical Atomic Power Plant.
"7. Process for Obtaining Fresh Water from the Sea
"8. Development of New Synthetic Materials
"9. Application of Engineering Principles to Social Problems
"10. Disaster Control—Storms, Floods, Hurricanes and Droughts."

—*C. L. McCuen*

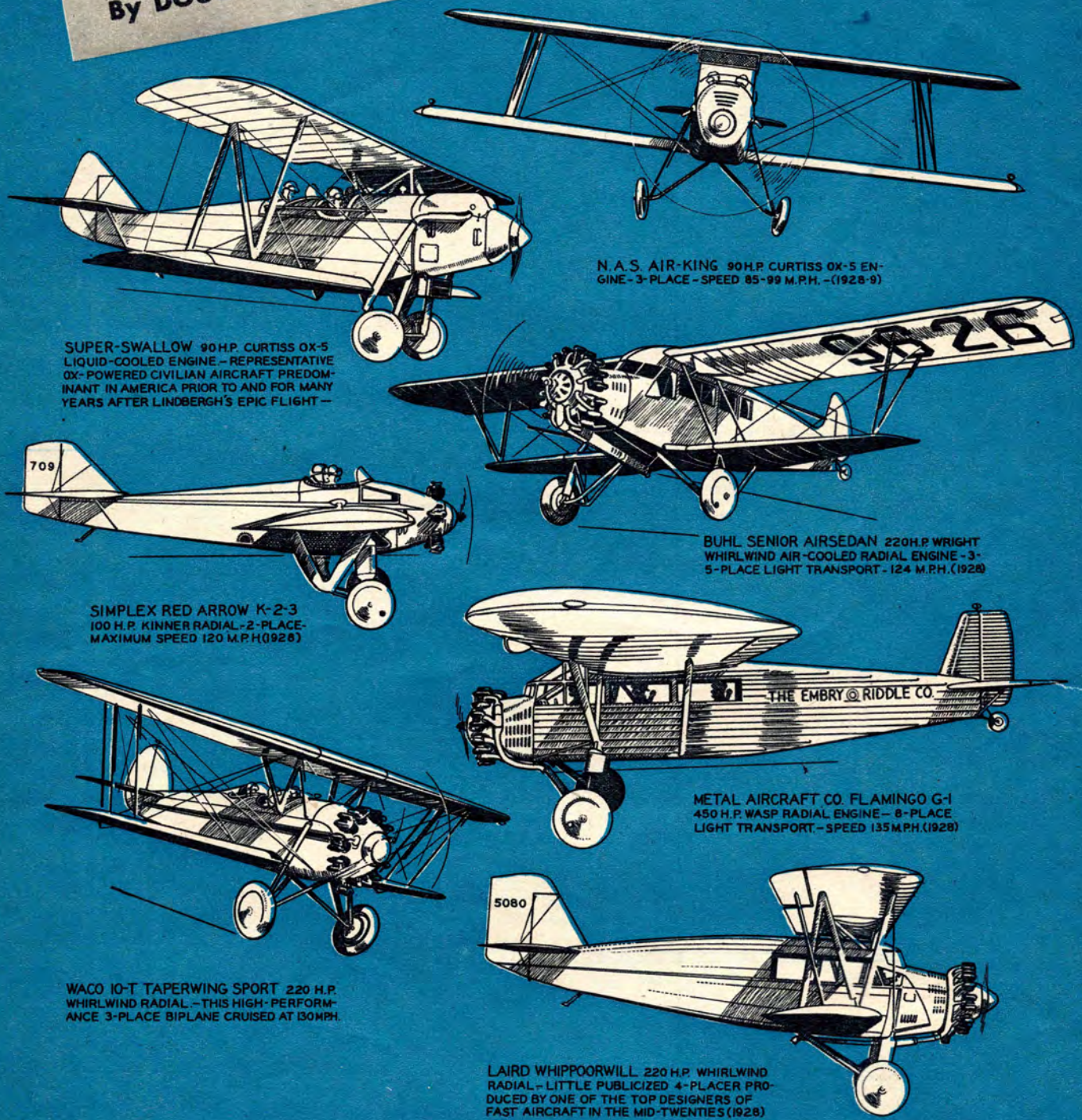
C. L. McCuen
General Manager
Research Laboratories Division
GENERAL MOTORS CORP.

AIR PROGRESS

By DOUGLAS ROLFE

Lindbergh Era

(1927-1929)



N.A.S. AIR-KING 90 H.P. CURTISS OX-5 ENGINE - 3-PLACE - SPEED 85-99 M.P.H. - (1928-9)

SUPER-SWALLOW 90 H.P. CURTISS OX-5 LIQUID-COOLED ENGINE - REPRESENTATIVE OX-POWERED CIVILIAN AIRCRAFT PREDOMINANT IN AMERICA PRIOR TO AND FOR MANY YEARS AFTER LINDBERGH'S EPIC FLIGHT —

BUHL SENIOR AIRSEDAN 220 H.P. WRIGHT WHIRLWIND AIR-COOLED RADIAL ENGINE - 3-5-PLACE LIGHT TRANSPORT - 124 M.P.H. (1928)

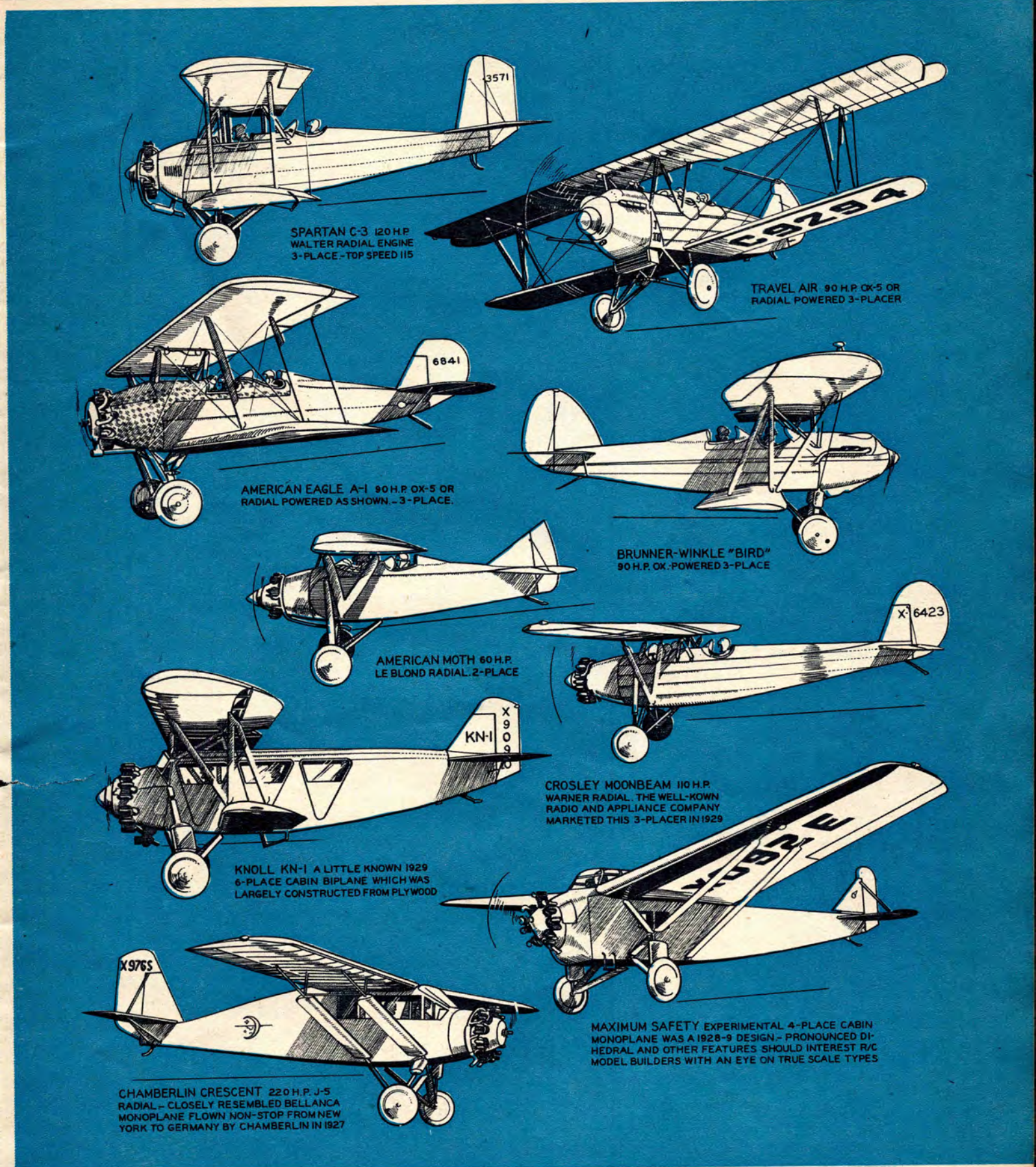
SIMPLEX RED ARROW K-2-3
100 H.P. KINNER RADIAL - 2-PLACE - MAXIMUM SPEED 120 M.P.H (1928)

METAL AIRCRAFT CO. FLAMINGO G-1
450 H.P. WASP RADIAL ENGINE — 8-PLACE LIGHT TRANSPORT. - SPEED 135 M.P.H. (1928)

WACO 10-T TAPERWING SPORT 220 H.P. WHIRLWIND RADIAL. - THIS HIGH-PERFORMANCE 3-PLACE BIPLANE CRUISED AT 130 MPH.

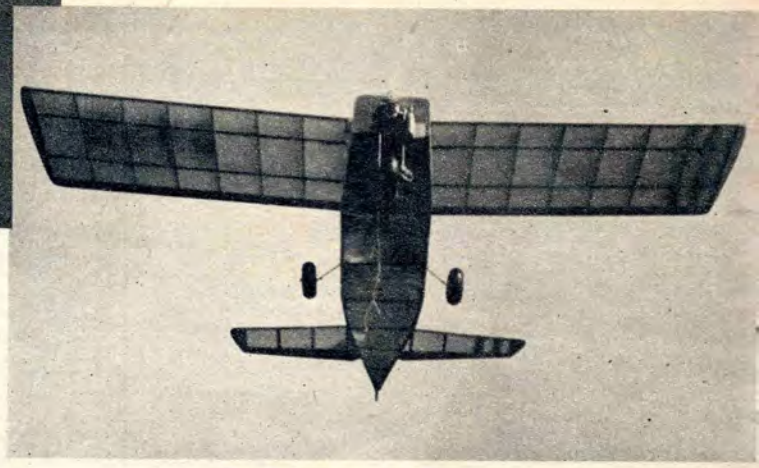
LAIRD WHIPPOORWILL 220 H.P. WHIRLWIND RADIAL - LITTLE PUBLICIZED 4-PLACER PRODUCED BY ONE OF THE TOP DESIGNERS OF FAST AIRCRAFT IN THE MID-TWENTIES (1928)

Commercial aviation in America was a struggling and financially perilous industry at the time of Lindbergh's New York-Paris flight, and by far the majority of civil aircraft in operation then were either war-surplus types or conversions. The success of the "Lone Eagle's" flight, however, served as a shot in the arm, and within a few years scores of aircraft by American designers were being offered as "tomorrow's plane today!" Since an enormous quantity of war-surplus Curtiss OX-5 engines were still available at low disposal prices, and since the Wright Whirlwind was a very expensive engine, it is hardly surprising to discover that a great number of new OX-powered open cockpit biplanes appeared. Some



of these are featured on these pages, as well as some of the more involved types which blossomed briefly. It is interesting to note that the Laird "Whippoorwill" was not the product of the E. M. Laird Airplane Co., builders of the famous Solution and Supersolution racing airplanes and the fast Speedwing three-place biplanes, but was a different concern called Laird Aircraft Corp. of Wichita, Kan. E. M. Laird was the original builder of the Swallow, back in 1923, which design was later acquired by other interests, and "Matty" Laird started manufacturing his speedsters in Chicago, Ill. . . . The planes shown here have never before appeared in Air Progress; other unpublished types of same era will follow.

STA-PUT PUTT-PUTT



CAPTIVE FREE FLIGHT FOR "SUNDAY FLYERS" IS IDEAL FOR SMALL FIELD OPERATION AND SPORT FLYING

Ever see a tethered gas buggy? We didn't either until "Putt-Putt" came along. You'll never win any meets with this model, but we guarantee it'll stay in sight longer than any other!

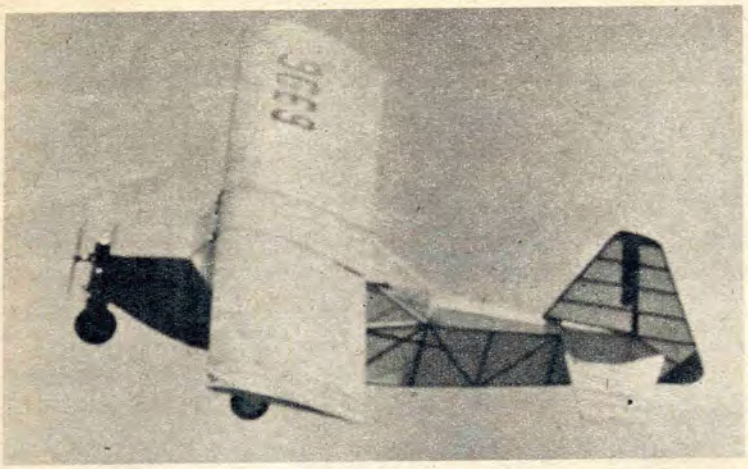
■ If you club members will quiet down we'll get the meeting under way. As far as the radio control fans in the audience are concerned—yes, we know that Putt-Putt looks like a fine deal for R/C . . . just hold off a minute!

Men, you're looking at a tethered free flight which is flown on a 30 lb. test pull "extensible" towline. Midway in your line you insert 25 feet of ¼" flat T-56 brown rubber—that's the big gimmick here. You don't want the rubber at the model end of your line because the glow fuel and fumes will affect it.

The towline is attached to either side of the front wheel and connected with a tie-line to the auto-rudder tab so that when the towline is taut the rudder tab is pulled to neutral position; when the towline is slack the rudder tab puts Putt-Putt into a gentle right turn.

Here's how the deal operates: walk out with the towline into the breeze stretching the rubber until a moderate pull is exerted on model (throttle down larger engines); let it take off and climb straight in a "Hi-Start" launch until it's overhead; feed out tow-line so it slackens and auto-rudder takes over and circles model; walk downwind with model as it flies in circles; at downwind end of field pull in on the towline as Putt-Putt comes into the wind; walk ahead of it upwind at same speed model flies; when you're

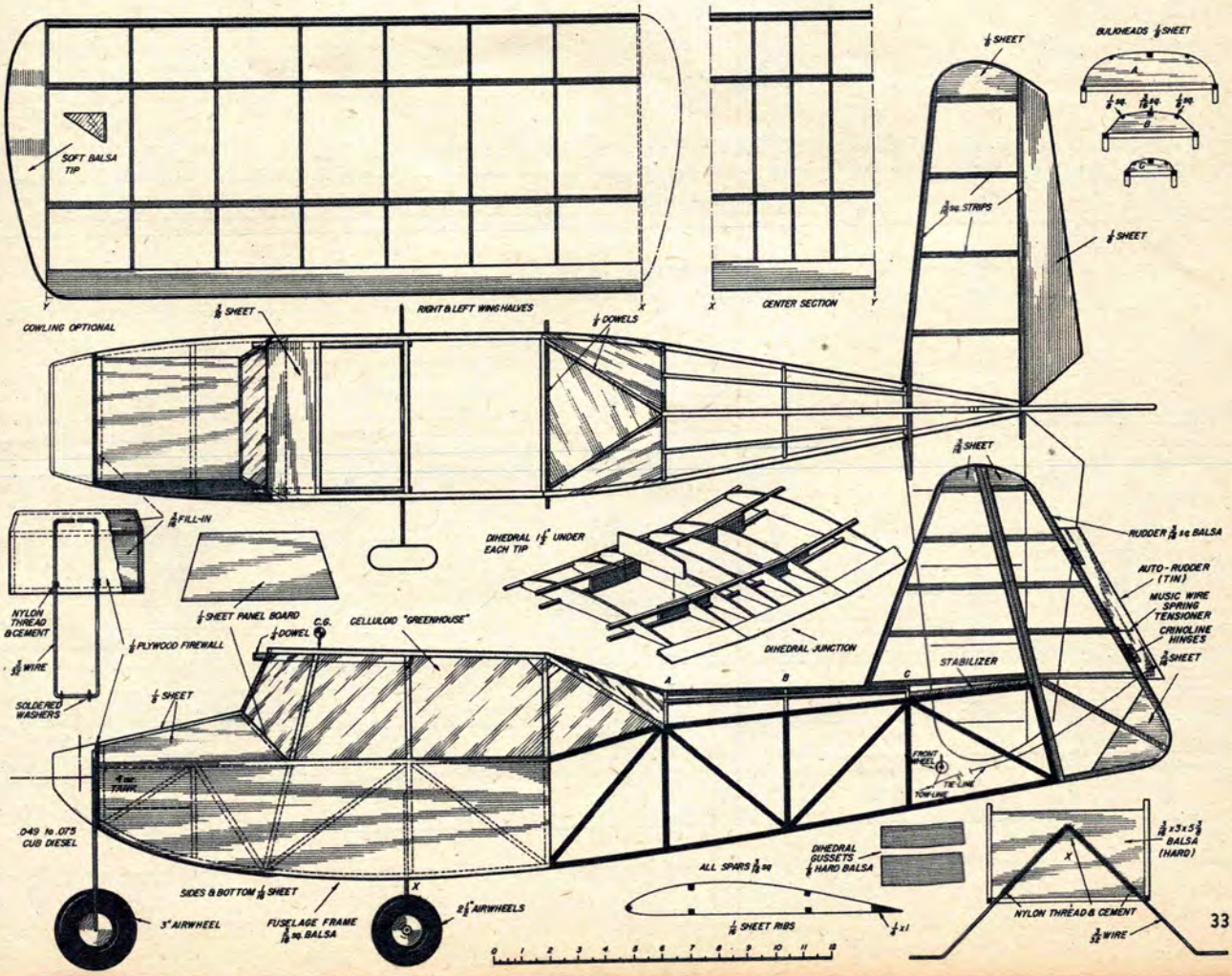
Full-size plans for Putt-Putt are on Group Plan #754 by Hobby Helpers, 770 Hunts Point Ave., New York 59, N.Y. (50¢)

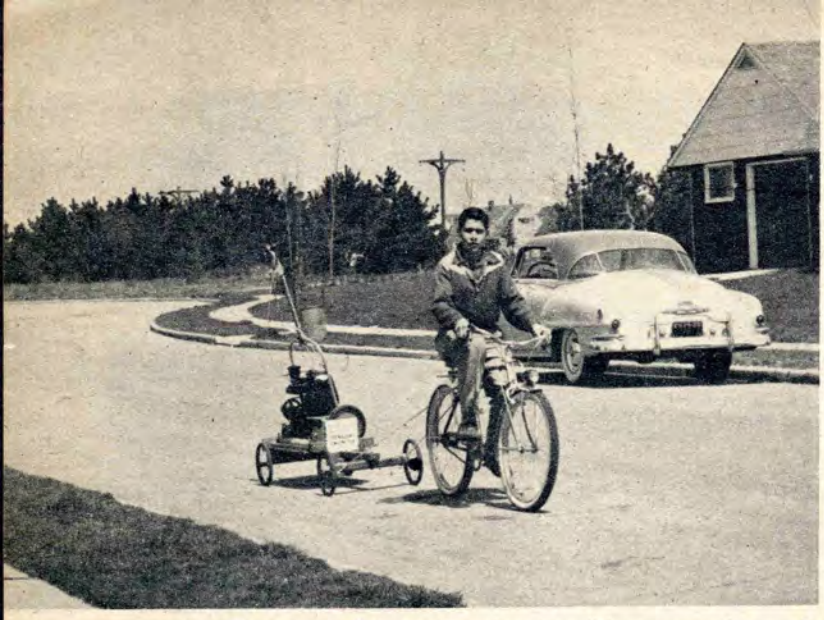


at the upwind end of the field slacken off on the line and repeat the circling flight.

Don't keep line taut when model is overhead or the ship will "tuck under" in an outside loop! When motor cuts tow model to center of flying field, slacken line and let 'er circle to a normal landing.

Radio control flyers who saw this model under construction and in the air were excited about the possibilities of operating it R/C. They especially liked the generous fuselage which would accommodate most any type of equipment. To convert to R/C substitute ¼" spars and framing for the 3/16" called for on the plan. Use 1/16" sheet balsa covering over the leading edge and to cap the ribs. Convert auto-rudder to flap; install equipment and batteries so C.G. is at 20% of the wing chord. As power is increased downthrust may be required.





A new type of part-time self-employed small businessman has made his appearance across the country . . . you can spot him on any sunny summer day making his appointed rounds from job to job . . . even though he gives his customers a trimming, they seem to like it!

"Now, let's see," muses the driver of this tractor-trailer rig, "seems to me I remember someone spoke of a prospect around here. Better check on that house." Sure enough here's interested housewife with the usual question . . . price? ($1.50) . . . what happens if it rains? (I come the next day) . . . can they count on me each week? (dependability and service is my motto—ask any of my old customers) . . . do I rake up the clippings? (if lawn's cut regularly there's no need).

You grow 'em! We mow 'em!

Says Bob Renner

He's Cutting His Way to College

■ Young Mr. Renner—he's 16—is an excellent example of how a teenager can turn his spare time to profit. Three summers ago Bob started cutting grass for his neighbors with a hand mower, last year shifted over to powered cutters. He's earned his first year's college tuition and is well along on the second . . . mostly by his mowing service.

Living in Westbury, N. Y., Bob attends Hempstead High School as a junior student (he travels about 2,500 miles per year to school).

Undecided at the moment on a career, Bob hopes to combine college (one with an ROTC program) with a hitch in the Navy. Right now his main hobbies are stamp collecting (both foreign and U. S.) and photography (he owns an expensive Voigtländer reflex). At school he is a member of the Riding Club and German Club. After school via bicycle he delivers the evening "Newsday." Bob comes from a big family; he has four brothers and two sisters. This is convenient, of course, when he needs an afternoon off from his paper route—plenty of substitute delivery boys right there at home!

For more details on cutting your way to college listen to Teenagers Unlimited program on the Mutual Broadcasting System

■ Each Saturday during the month of July over the facilities of the Mutual network, Teenagers Unlimited will be presenting Excello reel type power lawn mowers and AMF Flying Falcon bicycles to lucky students who want to start their own spare time grass cutting services. Consult your local papers for time and tune in Teenagers Unlimited every Saturday. Demonstrated here are the 21" Excello #521 and the Flying Falcon Roadmaster bike—similar to those which will be presented during the programs.

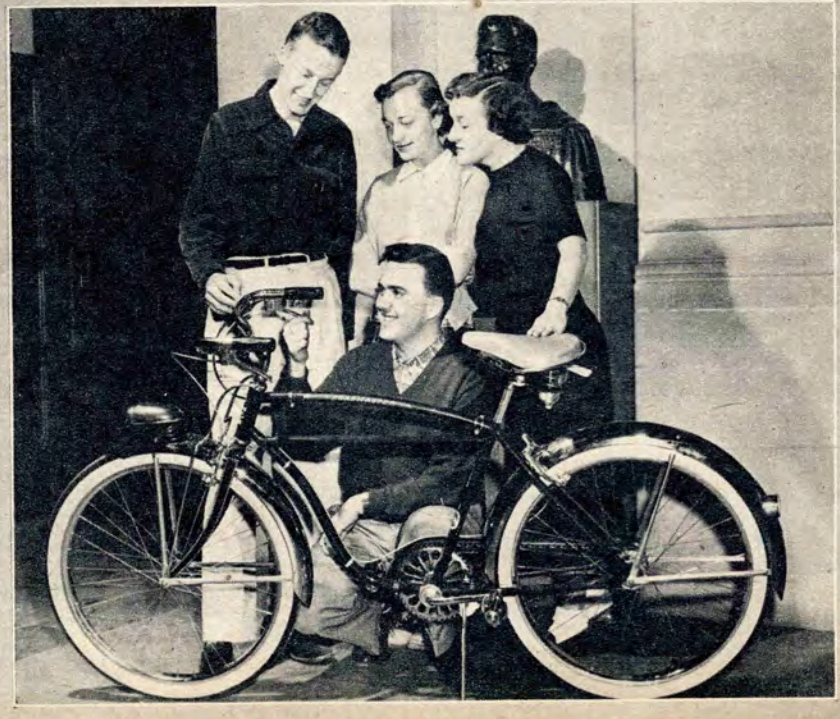
We'd like to hear from readers who have established similar spare time money-making services on how their efforts have worked out.

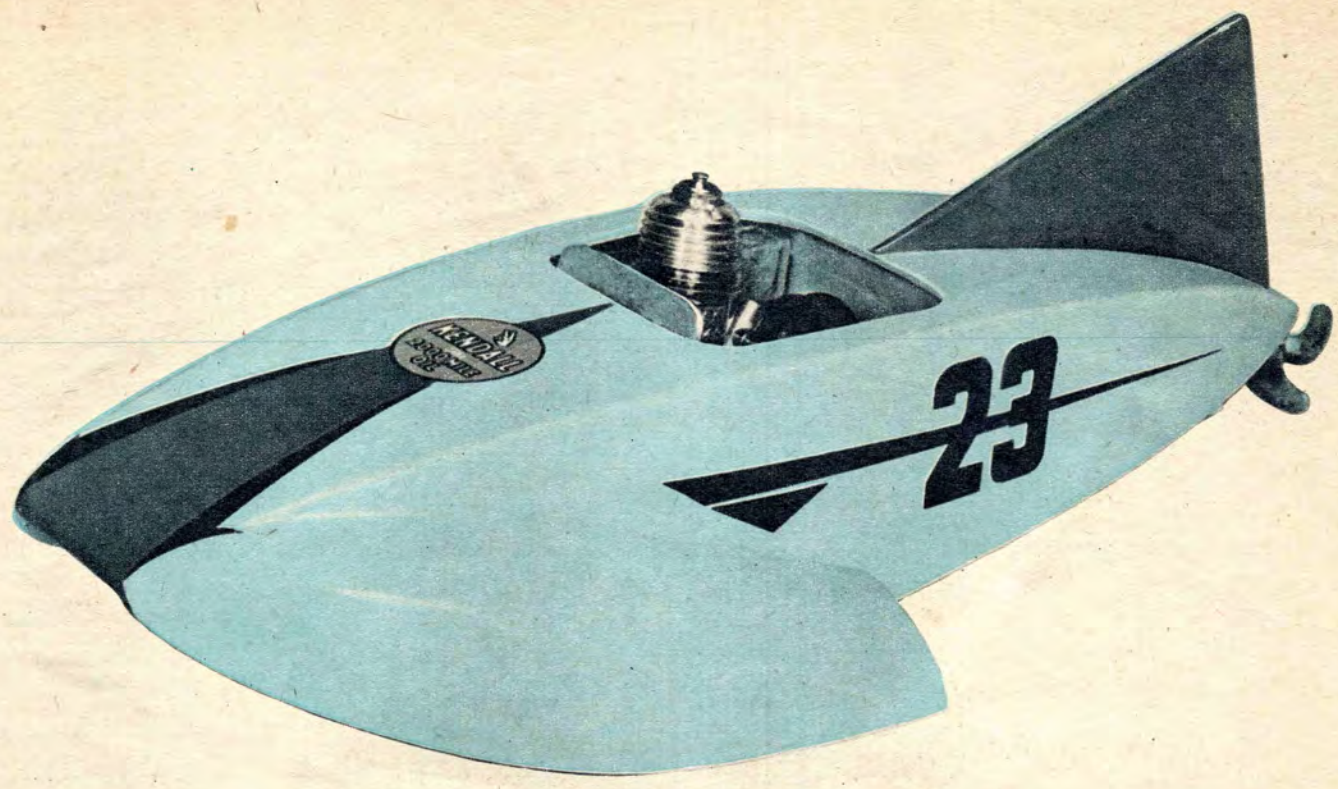
Indiana University students inspect AMF Roadmaster Flying Falcon. Four of these will be awarded to winners of the 4th "Little 500" bike race held annually for the benefit of the University Foundation's scholarship fund. AMF Roadmasters used exclusively in this race.

WIN THIS FLYING FALCON BICYCLE

For the two best photos of you, your friends or neighbors using a bike for fun, profit or transportation, ATH will award two 26-inch boys' AMF Roadmaster "Flying Falcon" bicycles in our Cycle-Photo Competition which closes July 31, 1954. (Send your pictures to Cycle-Photos, Air Trails HOBBIES For Young Men, 304 E. 45th St., New York 17, N. Y.) The Flying Falcon is a new concept in bikes combining the best features of both balloon-tire and lightweight types. Flying Falcons feature a three-speed gear shift, hand-operated brakes, long-coasting balloon tires, chrome fenders and rims, rocket ray headlight, forged steel fork and specially designed saddle with chrome scuff rail.

ENTER TODAY!

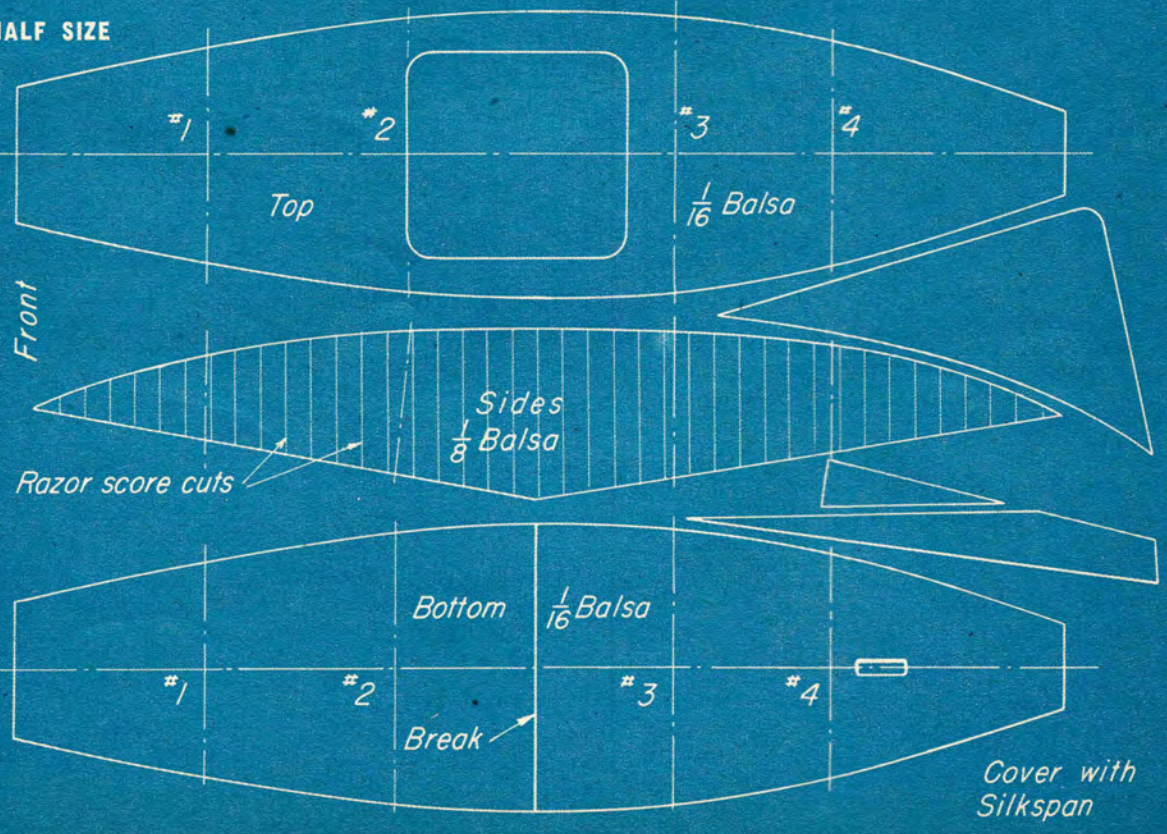


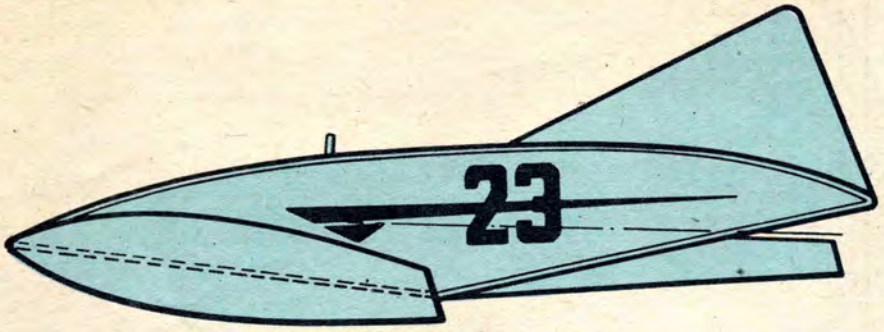


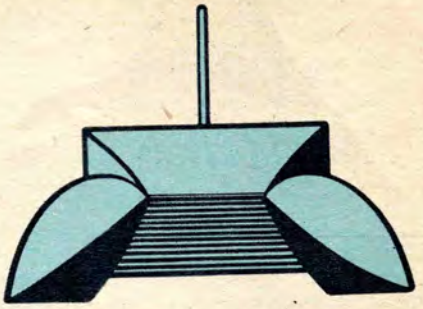
Ezi-Maid

This little hydroplane racing craft can be powered with any .02, .035 or .049 cubic inch displacement engine. Simple construction system enables you to duplicate boat in an evening

PLANS HERE ARE HALF SIZE





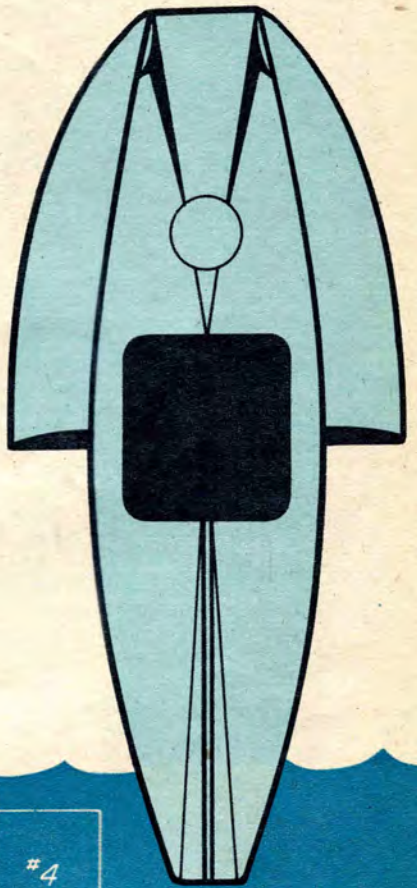


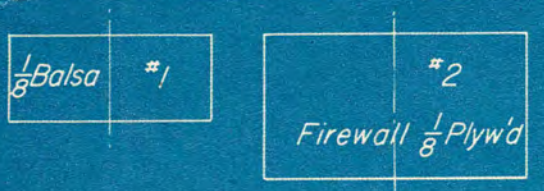
■ Don't be misled by that "23" on the side! This is a small, speedy economical hydroplane for Half-A tether racing (in a circle) or some straight-away record runs (whose can go "furthest" fastest?); power can be up to the .049's (a Wasp was on the test boat . . . With an .048 McCoy or OK Cub diesel you'll have no bad plugs if your little beauty upsets).

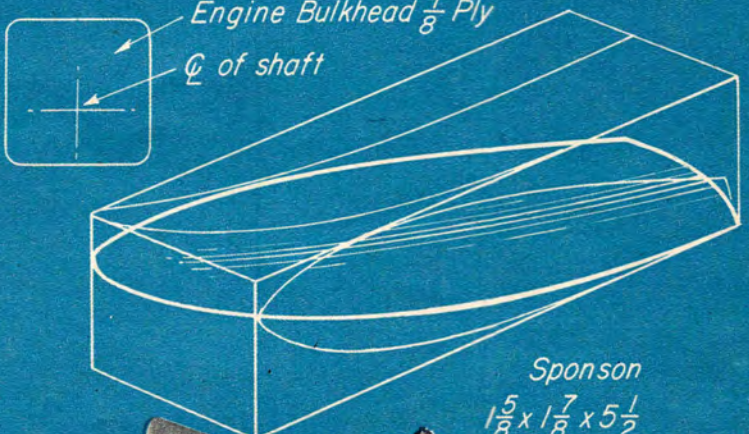
Construction sequence: cut out sides, score on outside as indicated; cement together with bulkheads #2 and #3; when dry add bulkheads #1 and #4; cut out bottom, break where shown, cement in place; add sponsons and ⅛" sheet balsa external keel; at this point sand everything that you've assembled.

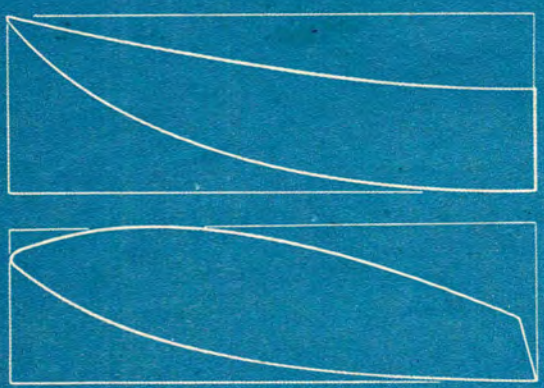
Before installing in boat bolt engine to firewall, connect up tank with neoprene tubing, add flywheel (secure it properly) and run unit outside boat to familiarize yourself with starting and operating procedure. Start the engine by passing a cord under the flywheel—pull up and down on cord's end smartly until engine pops and starts to fire; then pull up on that side which will leave engine turning in proper direction. After the engine unit is installed you'll find this starting system much simpler than trying to wrap the cord around the flywheel in cramped quarters.

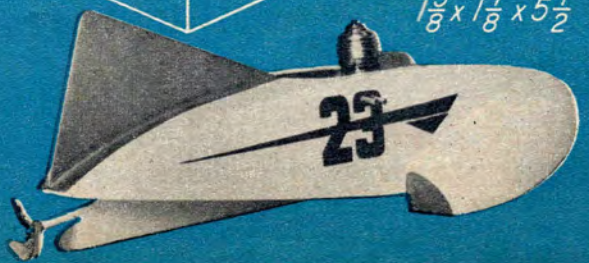
Install power unit; cement small ⅛" balsa sheet triangular stuffing shaft support to inside of bottom; (this is Berkeley's Half-A marine hardware); cement stuffing tube in place—use cement liberally inside and outside boat for this; solder prop to shaft; fill stuffing tube with waterpump grease, lubricate prop shaft, then (*Continued on page* 91)











Full-size working drawings for Ezi-Maid are a part of Group Plan #754 available from Hobby Helpers Plan Service, 770 Hunts Point Avenue, New York 59, N. Y. (50c). See main listing for other full-size plans.

Real GOLD MINE and COLLEGE SCHOLARSHIP

TOP 132 PRIZES IN MBS CONTEST

■ Mutual Broadcasting System officials have released details on a history-making model-building prize contest in conjunction with that radio network's nationally known Bobby Benson radio show. Winners will be modelers who have constructed the best miniatures of the B-Bar-B ranch as they visualize the famous "spread."

First prize will be a gold mine and 1-month trip to Deadwood City, South Dakota. Next award is a 4-year scholarship to Sul Ross State College in Texas. Following 12 prizes are complete sets of the Book of Knowledge. Then come 6 Polaroid Land Cameras, 6 Wen-Mac Automite model race cars with engines, 6 Wen-Mac Aeromite model planes with engines, and—not least—96 sets of Voit swim fins, masks and nose clips.

BOBBY BENSON CONTEST RULES AND PRIZES

1. Build a model of what *you* think the B-Bar-B Ranch looks like.
2. Send a photograph of your model to "Gold Mine Contest," Box 24, Prince Street Station, New York 12, N. Y.
3. All entries must be postmarked not later than midnight, July 18, 1954.
4. Contest is open to all boys and girls who will not be over seventeen (17) years of age on July 18, 1954, so be sure to include your date of birth on the back of your entry.
5. Entries will be judged on originality, neatness, and workmanship, and decision of the judges is final. Entries become the property of the Mutual Broadcasting System and cannot be returned.
6. Duplicate prizes will be awarded in case of a tie or ties.
7. The winner's model will be sent to New York City, where it will be professionally photographed and published in "Air Trails HOBBIES For Young Men" magazine.
8. Contest is not open to employees of Mutual Broadcasting System, Street and Smith Publications or their families.

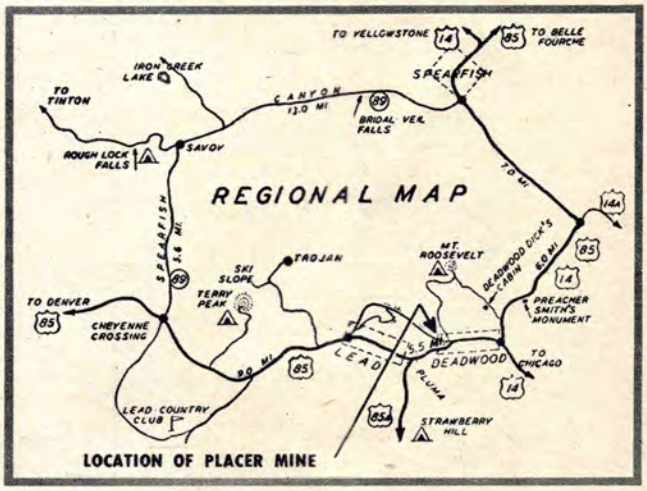
As announced, the grand first prize is a clear quit-claim title to a working placer gold mine with a 300-foot frontage situated on Upper Main Street, west of the Deadwood City limits. Winner will arrive in Deadwood City via the nation-wide Trailways Bus System. The winner will be a guest of Mr. Raleigh Furois, Manager of the Franklin Hotel in Deadwood, for one full month commencing August 1, and will be "grub-staked" during that time by Mr. Leonard Tollekson at the Franklin Grill.

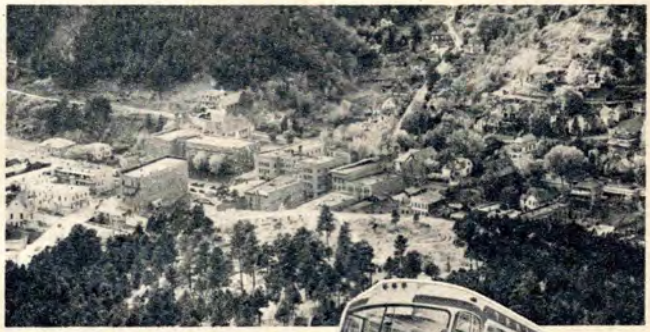
The first-place model builder will be fitted out in Western clothes, given a pick and shovel, his or her own goldpan and a live burro. In addition, the winner tours the Black Hills, sees the Great Homestake Gold Mine at Lead, the Black Hills' Passion Play.

Second prize, the four-year scholastic scholarship, will include books, fees, tuition, and room rent for that period at Sul Ross State College through the courtesy of its president, Mr. Bryan Wildenthal.

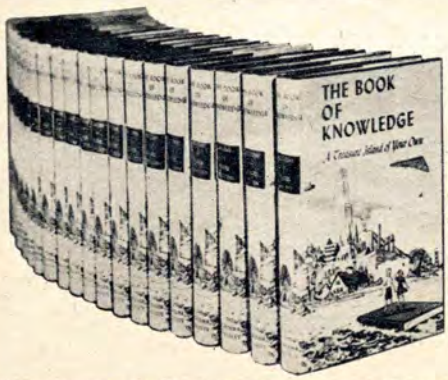
The 20-volume set of the beautifully bound and colorfully illustrated Book of Knowledge covers all fields of human knowledge. The famous Polaroid Land Camera develops its own picture in just one minute.

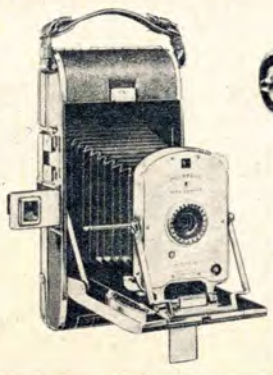
Bobby Benson and his "Songs of the B-Bar-B" program is broadcast coast-to-coast on the Mutual Broadcasting System. Consult your local listings for time and station. Follow the stories and songs of Bobby, foreman Tex and the fabulous Windy Wales; B-Bar-B ranch hands are busy hobby-model fans in their off-duty time.

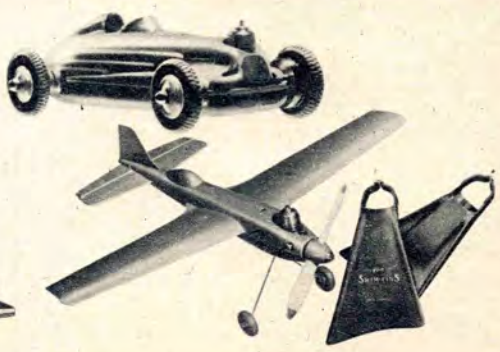




Deadwood City's main business district (above); a portion of the Sul Ross campus with its modern buildings shown below.



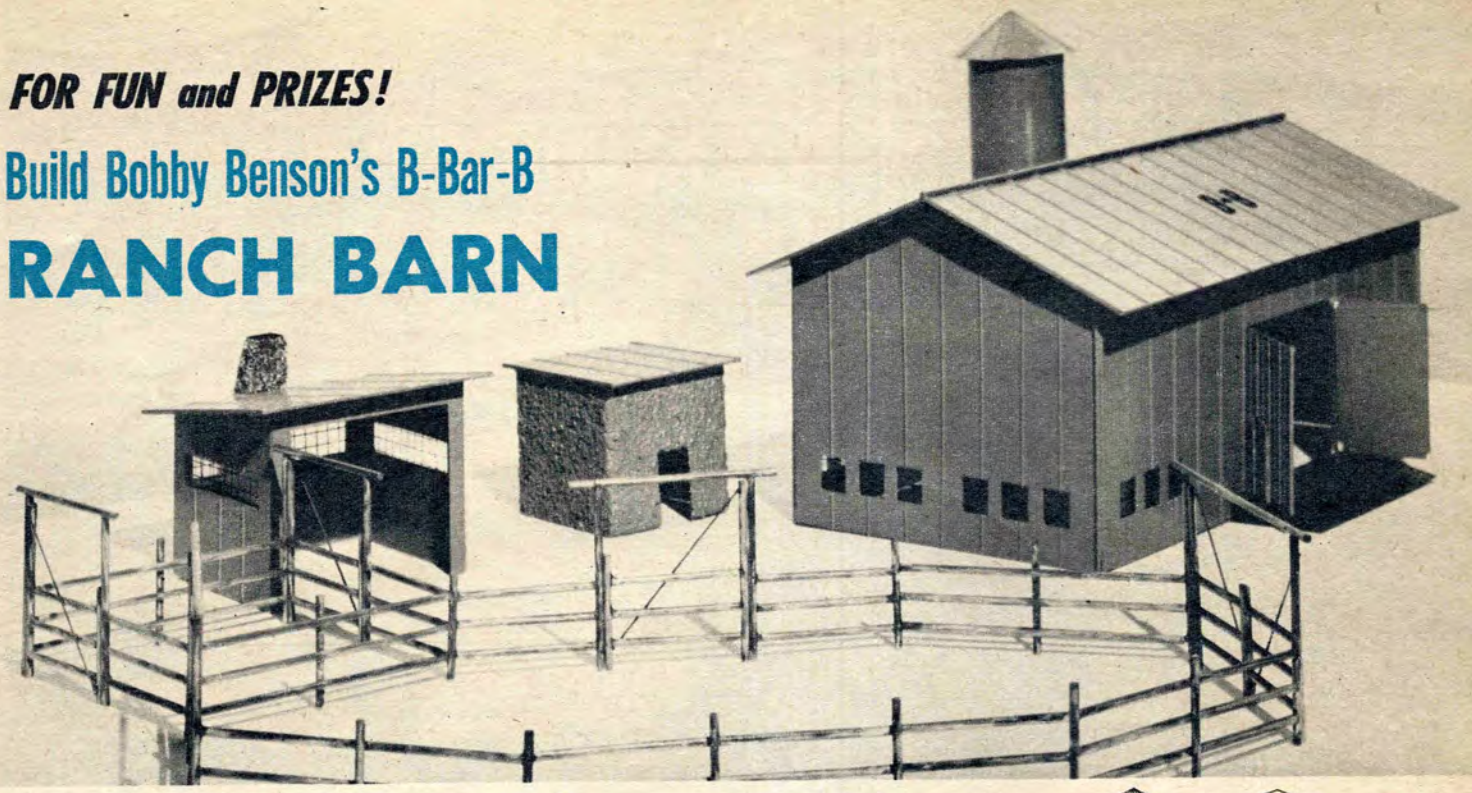




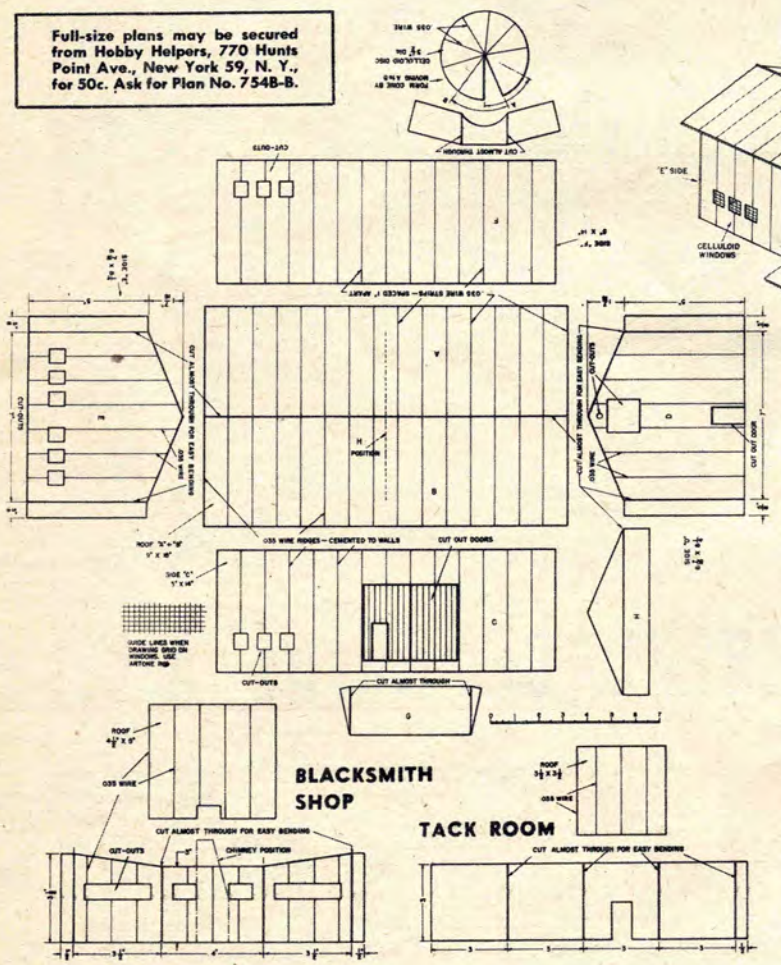
FOR FUN and PRIZES!

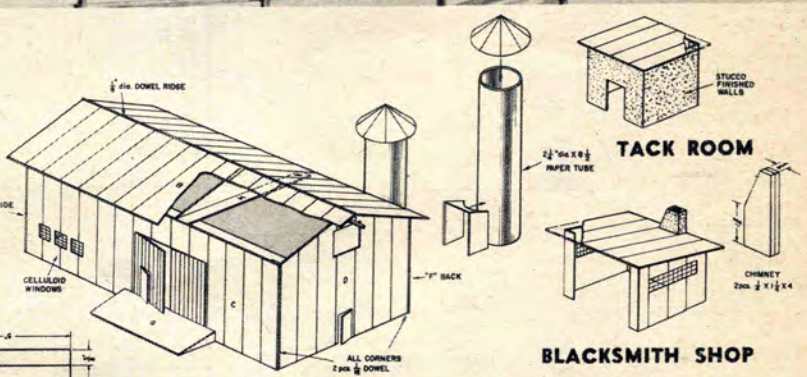
Build Bobby Benson's B-Bar-B

RANCH BARN

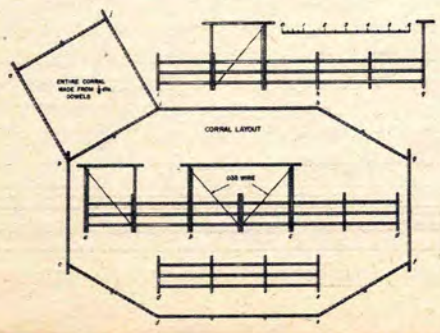


Full-size plans may be secured from Hobby Helpers, 770 Hunts Point Ave., New York 59, N. Y., for 50c. Ask for Plan No. 754B-B.





■ This model ranch barn and work buildings will be of special interest to all listeners of the famous "Songs of the B-Bar-B" program aired nationally over Mutual network stations. Considering the prizes, the project should appeal, too, to all plane-boat-railroad model fans since it is such an easy affair to turn out. But note this: the best model will suffer if it's poorly photographed! We'll judge your model on the basis of the photo you submit. DON'T SEND YOUR COMPLETED MODEL TO US—JUST SEND A PHOTO OF IT! To be considered in the judging your photo entry must be in our hands not later than July 31, 1954. You need not use these exact plans. Work from your own plans or full-size patterns from Hobby Helpers. Send barn photos to Air Trails HOBBIES, 304 E. 45th St., New York City, 17.



Here are the "ATH" Awards!

FIRST PRIZE: $100.00! SECOND PRIZE: $50.00! NEXT 4 PLACES: Eveready battery-powered famous-make AM band personal radio; measures 2 x 6 x 7¾ inches; pulls in all local 500 to 1600 KC stations with the famous Eveready batteries with "Nine Lives." NEXT 40 PLACES: Two-tone fountain pen-type personal flashlights by Eveready complete with the long-lasting, "Nine-Lives" Eveready batteries. These pocket flashlights measure 5 in. in length, have diameter 9/16 in.

AIR TRAILS HOBBIES
HOME and SCHOOL

Workshop Award

This OUTDOOR FIREPLACE Burns A.C.!

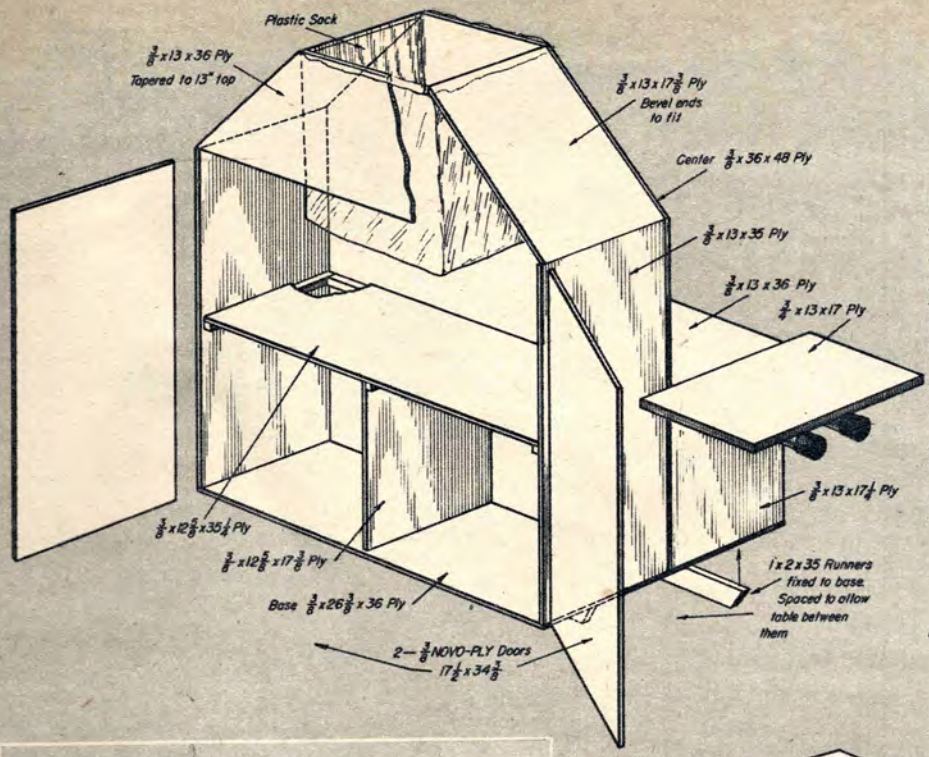
■ Sounds silly when you tell anybody about it—a backyard grill that operates off alternating current—but if your family has one of those new electric rotisseries you'll be a well-fed hero when you trot out your "phony" fireplace.

When the project was first suggested as an example of a good ATH Workshop Award presentation, initial reactions were tolerant smirks, but after running some neighborhood surveys the editors were much surprised to find 1) lots of folks have these portable electric grills; 2) many don't want to bother with conventional outdoor brick, rock or cement wood-and-charcoal burning fireplaces because of the smoke, sparks and elaborate preparations; 3) all were unanimous in their approval of this patio or backyard summertime project.

Construction is pretty much explained in the drawings. The brick effect is achieved through water-proof Sanitas-type wallpaper which if properly applied will withstand heavy rains (as our tests proved). On a patio the bench can be used as a seat; on grass the chimney-cabinet unit sits on top of the bench, raising it out of the grass or dirt.

As far as cost of materials is concerned we suggest you remind Pop that June 14 to 20 is National Father-Son Week! If you present the idea and plans for this deal, the least he can do is sponsor the lumber and equipment!

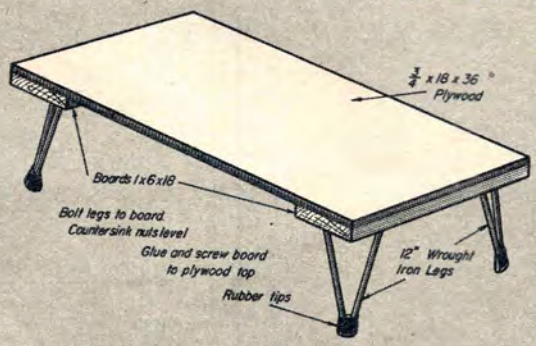
One feature which Mom will cheer is that plastic bag suspended in the "chimney" on hooks. All the scraps, paper plates and napkins go in there when you clean up. The bag is afterwards emptied, rinsed out and reused. No more policing the back yard after the picnic. The fireplace is carried easily by the metal tubes; it can be stored in garage or cellar if you're away during the summer or when cold weather comes.

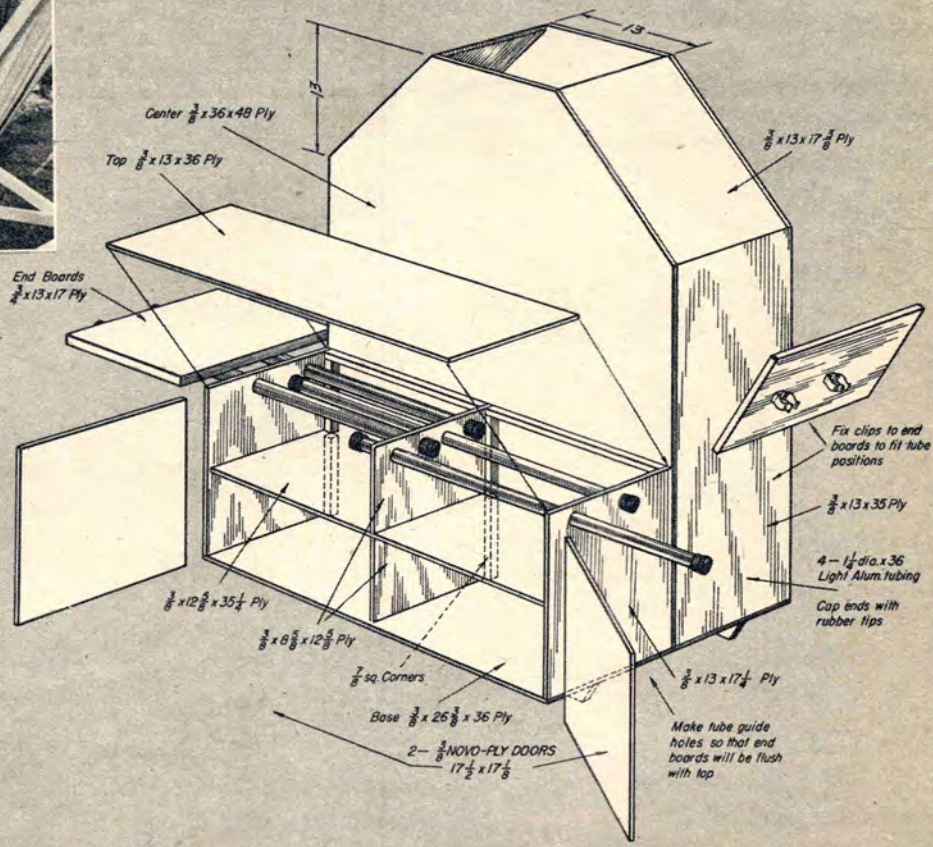

Plastic Sack
3/8 x 13 x 36 Ply
Tapered to 13" top
3/8 x 13 x 17 3/8 Ply
Bevel ends to fit
Center 3/8 x 36 x 48 Ply
3/8 x 13 x 36 Ply
3/8 x 13 x 36 Ply
3/4 x 13 x 17 Ply
3/8 x 13 x 17 1/4 Ply
3/8 x 12 5/8 x 35 1/4 Ply
3/8 x 12 5/8 x 17 3/8 Ply
Base 3/8 x 26 3/8 x 36 Ply
1 x 2 x 35 Runners fixed to base. Spaced to allow table between them
2 — 3/8 NOVO-PLY Doors 17 1/2 x 34 3/8

$50 to the Talent Reporter

■ We will present $50 to the individual who has brought to our attention the winning original shop project submitted by a school shop teacher or a home shop craftsman. Rare or hard-to-obtain materials should be avoided. Send your nominations to Shop Project Award, c/o Air Trails HOBBIES For Young Men, 304 East 45th Street, New York City 17.

BE A TALENT DETECTIVE! "TURN IN" YOUR FAVORITE CRAFTSMAN; YOU BOTH COLLECT REWARDS!


3/4 x 18 x 36 Plywood
Boards 1 x 6 x 18
Bolt legs to board Countersink nuts level
Glue and screw board to plywood top
12" Wrought Iron Legs
Rubber tips


13
3
Center 3/8 x 36 x 48 Ply
Top 3/8 x 13 x 36 Ply
3/8 x 13 x 17 3/8 Ply
End Boards 3/4 x 13 x 17 Ply
Fix clips to end boards to fit tube positions
3/8 x 13 x 35 Ply
4 — 1 1/4 dia. x 36 Light Alum. tubing
Cap ends with rubber tips
3/8 x 12 5/8 x 35 1/4 Ply
3/8 x 6 5/8 x 12 5/8 Ply
7/8 sq. Corners
3/8 x 13 x 17 1/4 Ply
Base 3/8 x 26 3/8 x 36 Ply
2 — 3/8 NOVO-PLY DOORS 17 1/2 x 17 1/8
Make tube guide holes so that end boards will be flush with top

$50 to the Teacher or Craftsman

■ We will present $50 to the school shop teacher or home shop craftsman whose winning original shop project has been brought to our attention by a Shop Project Talent Reporter. If the editors find your project of sufficient interest to present here after it has been called to their attention by a Talent Reporter, you will get full information on how to prepare rough drawings and data. Let's go, now. . . . Send photo or description of your favorite craftsman's favorite project.

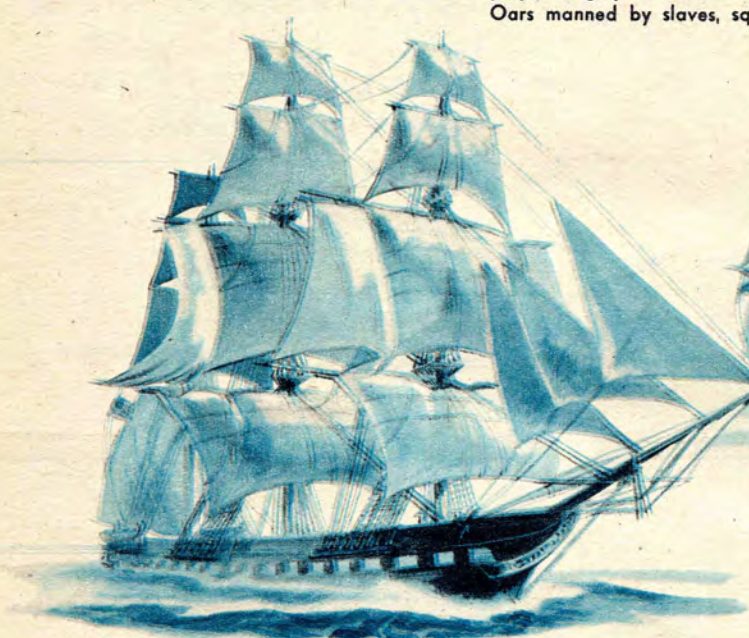
Ship Progress

By H. Alonzo Staab

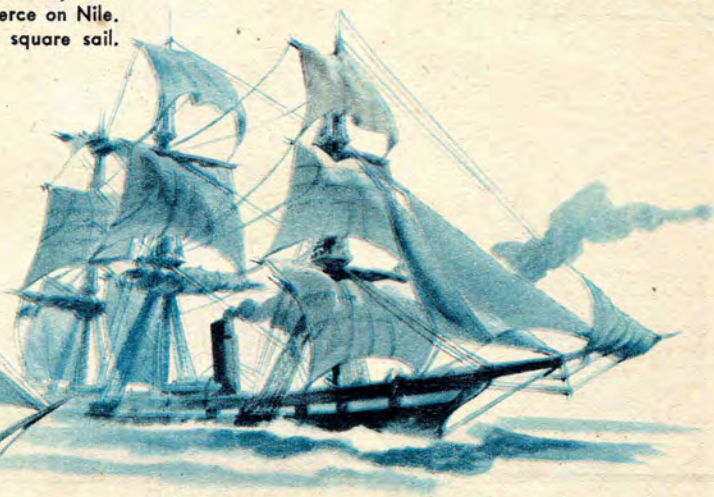
1. Primitive African dugout, a hollowed log, was man's first attempt to create hull structure of a boat.

2. Egyptian Galley (1600 B.C.). Employed largely for commerce on Nile. Oars manned by slaves, square sail.

3. Viking Long Ship (c. 1000 A.D.). Developed by Norse sea rovers for use in war. Sailed Baltic and North Seas, reached as far as Nova Scotia.

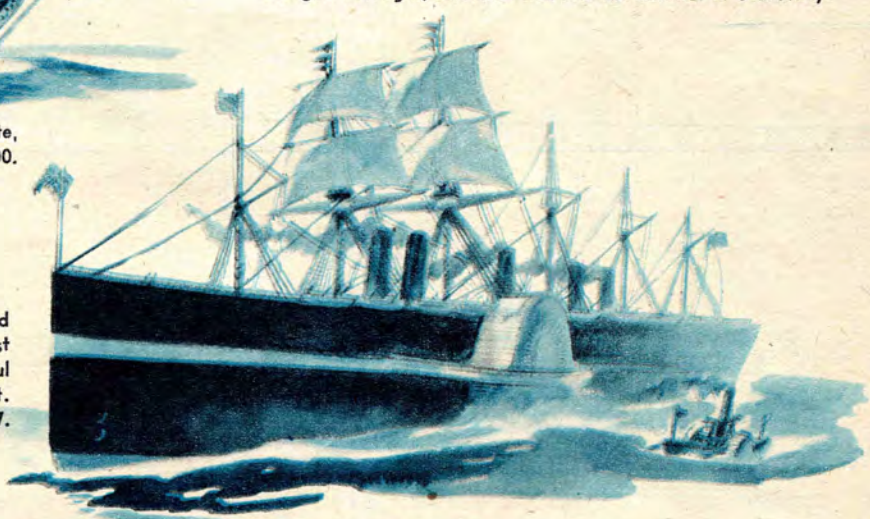


4. Constitution (Old Ironsides). Famous U.S. frigate, largest and heaviest armed ship of day. Crew 400.



5. Hartford. Civil War armed sloop, flagship of Capt. David Glasgow Farragut, who later was first full admiral of U.S. Navy.

6. Clermont. Designed by Robert Fulton, first financially successful U. S. steamboat. Launched in 1807.



7. Great Eastern. Built to sail between England and Australia without refueling. Never made the voyage; eventually used for laying Atlantic cable.

■ Additional notes: 1. The dugout, also used by the American Indians, was predecessor of the canoe and a great improvement over the log on which primitive man floated, using his hands as paddles.

2. The Egyptian Galley was usually clinker built of cedar wood, approximately 60 to 70 ft. long. Strengthened by a heavy multistrand rope stretched from one end of the hull to the other and supported by two to four crutches to ease the strain of the overhanging ends.

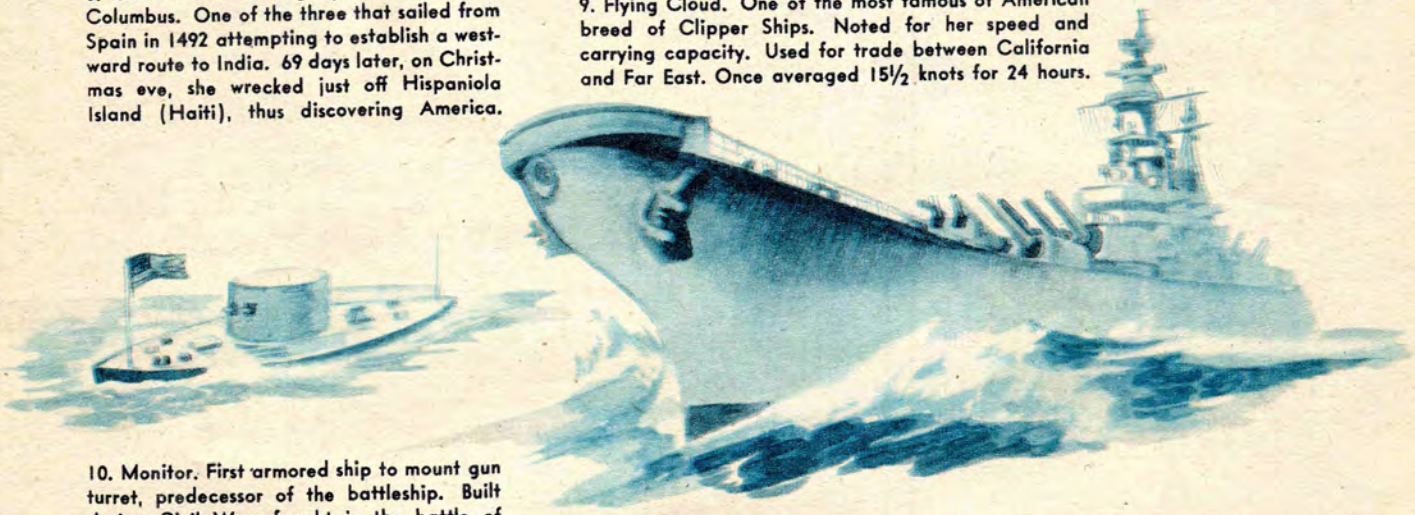
3. The Viking Long Ship had to be rugged, as the seas it sailed were rough. It was 160 to 170 ft. long and built primarily to be propelled by oars. The modern whaleboats of today are very similar in shape.

4. The Constitution was built at Edmund Hart's Naval Yard, Boston, Mass. It was launched in October 1797 and first put to sea on July 22, 1798. In the War of 1812 it carried 55 guns and a full war complement of 465 officers and men. The length of the main deck was 174 ft. 10½ in., beam 43 ft. 6 in., displacement 1576 tons.

5. The Hartford's length was 225 ft., beam 44 ft., displace-

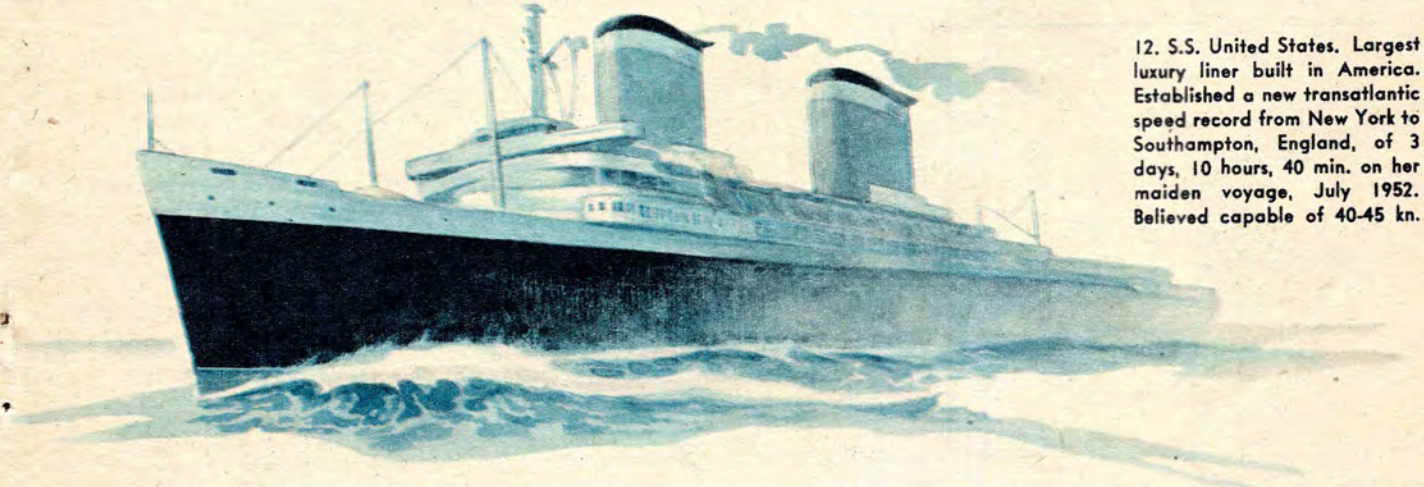
8. Santa Maria. Flagship of Christopher Columbus. One of the three that sailed from Spain in 1492 attempting to establish a westward route to India. 69 days later, on Christmas eve, she wrecked just off Hispaniola Island (Haiti), thus discovering America.

9. Flying Cloud. One of the most famous of American breed of Clipper Ships. Noted for her speed and carrying capacity. Used for trade between California and Far East. Once averaged 15½ knots for 24 hours.



10. Monitor. First armored ship to mount gun turret, predecessor of the battleship. Built during Civil War, fought in the battle of Hampton Roads May 9, 1862, defeating the Confederate armored ship Merrimac. Designed by Swedish engineer John Erickson.

11. U.S.S. Missouri (Mighty Mo). Famous battleship on whose deck peace treaty with Japan was signed. Wartime complement 2700 men and officers. Full load displacement is 57,216 tons. Four screws, 200,000 hp geared turbine engines, maximum speed 33 knots. Served also in Korean war, now slated for mothballs.



12. S.S. United States. Largest luxury liner built in America. Established a new transatlantic speed record from New York to Southampton, England, of 3 days, 10 hours, 40 min. on her maiden voyage, July 1952. Believed capable of 40-45 kn.

ment 2900 tons. Mounted 24 smooth-bore broadside cannon and 2-20 powder rifled-guns.

6. Clermont was built at the yards of Charles Brown, Corlear's Hook, N. Y. Length 150 ft., beam 18 ft., displacement about 100 ton. Its designer, Fulton, was not the first inventor of steamboats, being preceded by others here and abroad.

7. The Great Eastern was largest passenger ship of its time. Length was 692 ft., displacement 18,914 tons. Capacity 3000 passengers. Built in England in 1854.

8. Santa Maria carried crew of 39 men, was approximately 80 ft. long, displaced in the neighborhood of 200 tons.

9. Flying Cloud (Clipper Ship) was launched at Donald McKay yards, Boston, Mass. in 1851. Length 225 ft., displacement 2783 tons. Flying Cloud burned at St. Johns, New Brunswick in 1874.

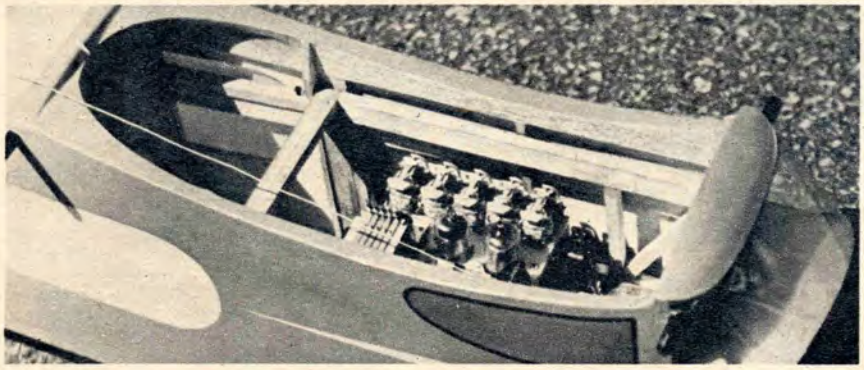
10. Monitor: flat bottom hull, 174 ft. long with a beam of 41 ft. 4 in. Displacement was approximately 1250 tons, speed 9 knots.

11. U.S.S. Missouri: one of the four of the Iowa Class battleships. Completed in 1943 at Brooklyn Navy Yard.

HAROLD deBOLT'S

OVER and UNDER

An R/C Model for Inverted Maneuvering



Full-size plans for Over and Under are on Group Plan #754A from Hobby Helpers, 770 Hunts Point Ave., New York City 59, New York (50c)

■ Ever since I flew my first control line model inverted I have thought how wonderful it would be if we could do the same thing without lines to hamper the model. This R/C job has allowed me to see the dream fulfilled. Here is the first model flying by radio control to perform *all* of the C/L stunt maneuvers: inside and *outside* loops from level flight, real vertical dives, half-mile inverted flight, rolls done at the drop of a hat, horizontal and vertical eights. To top it off, honest-to-goodness *tail spins* just as they are done with full scale machines! And there is no sacrifice to normal flight, in fact ordinary flying is greatly improved in some respects.

It required only few changes in my basic model design to produce these additional flight characteristics. The model has been worked out to provide the best possible normal flight and still have excellent inverted flight performance. Any major configuration or weight changes would detract from its flight performance. Two things were added to our standard models, then it was just a matter of refinement. First you must have elevator control, preferably trimmable or proportional, although everything but the tail spin may be done with the fixed position types (providing you are willing to practice a bit more). The multi-channel radio systems gave me this control in its finest form. Second and equally important is the symmetrical wing.

The rest of the model is of accepted design, so we will cover the changes made. First of all is the elevator control; without it inverted flight is impossible. You will notice that the elevators are generous in size and that they move through considerable distances. This comes directly from full-scale practice; you need large areas and big movements to change the model's direction quickly, yet smoothly. Smaller areas will allow quick changes but the reaction tends to be slower and the turns more jerky. Good figure eights and loops require the model to turn smoothly in relatively small areas. To move these elevators a powerful actuator is required because they build up heavy air loads under certain circumstances. Servos are highly recommended although an escapement which can use *heavy* rubber can do the job. Pushrods are another problem; they should be run through several guides to prevent bending under load.

The need for a symmetrical wing is quite obvious. Your model must have the same flight altitude while inverted as when upright. To accomplish this the plane needs equal lift in both positions —only a symmetrical wing will give this. Symmetrical airfoils actually have good characteristics any way you look at them, providing you use them in the best possible manner. The lift obtained from a symmetrical foil is about equal to a flat bottom section and the drag is lower *when* the symmetrical foil is used at high angles of attack. That very fact is a problem for us, for in order to get equal flight upright or inverted we must set the airfoil at a zero angle of incidence. Unfortunately the symmetrical airfoil offers lowest lift at zero angle of incidence.

The problem was solved in two ways; first it was found that by staying under a 15 oz. per sq. ft. wing loading enough lift could be developed to match a normal R/C model in the glide. Then to help even more the stabilizer was set at a slight angle to force the model into a low angle of attack while flying. The combination of the two provided sufficient lift and yet the stabilizer angle was small enough so that the elevator could overcome it for inverted flight. End

result is a quite normal flying model with a slightly higher flying speed due to the lower drag of the wing, but even this helped by adding to the penetration qualities of the model.

Another problem which occurs when flying inverted is what to do about wing-tip stability. On normal models we use tip washout to accomplish this. Obviously washout while inverted is not desirable. The use of "spoiler boards" adds tip stability. They act just as their name implies; they spoil the lift of the wing in the area used—usually this occurs as the airfoil approaches higher angles of attack.

We had been told that symmetrical wings were usually stable and we were pleased to find this to be a fact.

The answer seems to be that the wing lifts from both sides under these circumstances and actually dampens out its own oscillations as it returns to normal flight from abnormal altitudes.

Over and Under has been flying for more than a year and design-wise it appears to be debugged. However, there are a few other things to consider for inverted flight. A good inverted flight tank is required; a normal tank will not work while inverted. Two will work well, one should be used. The pressure type tank will do the job very nicely and is available in commercial form. The other one is the so called "clank tank" with an internal swivel which rotates with the fuel. This was the type used in the model; it was satisfactory and simple. One other item of importance is the mounting of all gear; everything must be securely fastened.

Flying *Over and Under* is most thrilling. The launch must be faster. Due to higher flying speed it is necessary to launch it at your fastest possible speed; keep the launch level to prevent a stall. If you R.O.G. be sure there is plenty of room to build up the required flying speed. Landing is a bit different also, you may find that the model sinks faster than it appears; do not undershoot the field.

For the most part flying maneuvers are done exactly as in full scale; a few pointers can be of help. Have lots of altitude before attempting anything new . . . there is no substitute for it!

Try new maneuvers while the model is gliding; without engine power the speed build-up in "down" maneuvers is not nearly as great. Loops come easily from level flight, simply trim the model for flat flight and apply full up elevator; it should snap around into nice tight consecutive "insides." "Outsides" can be done from any model altitude, simply apply full down elevator. With correct elevator movement they should be tight and round. Level recoveries come best when the elevator is neutralized just before the loop is completed.

A horizontal eight is a combination of an outside plus an inside. As you start into the second consecutive outside full up is applied at the correct moment so that the resulting inside loop is even with the previous outside. Vertical eights are done in a similar manner except that you do the inside loop first and go into the outside at the bottom of the inside loop and end up back where you started.

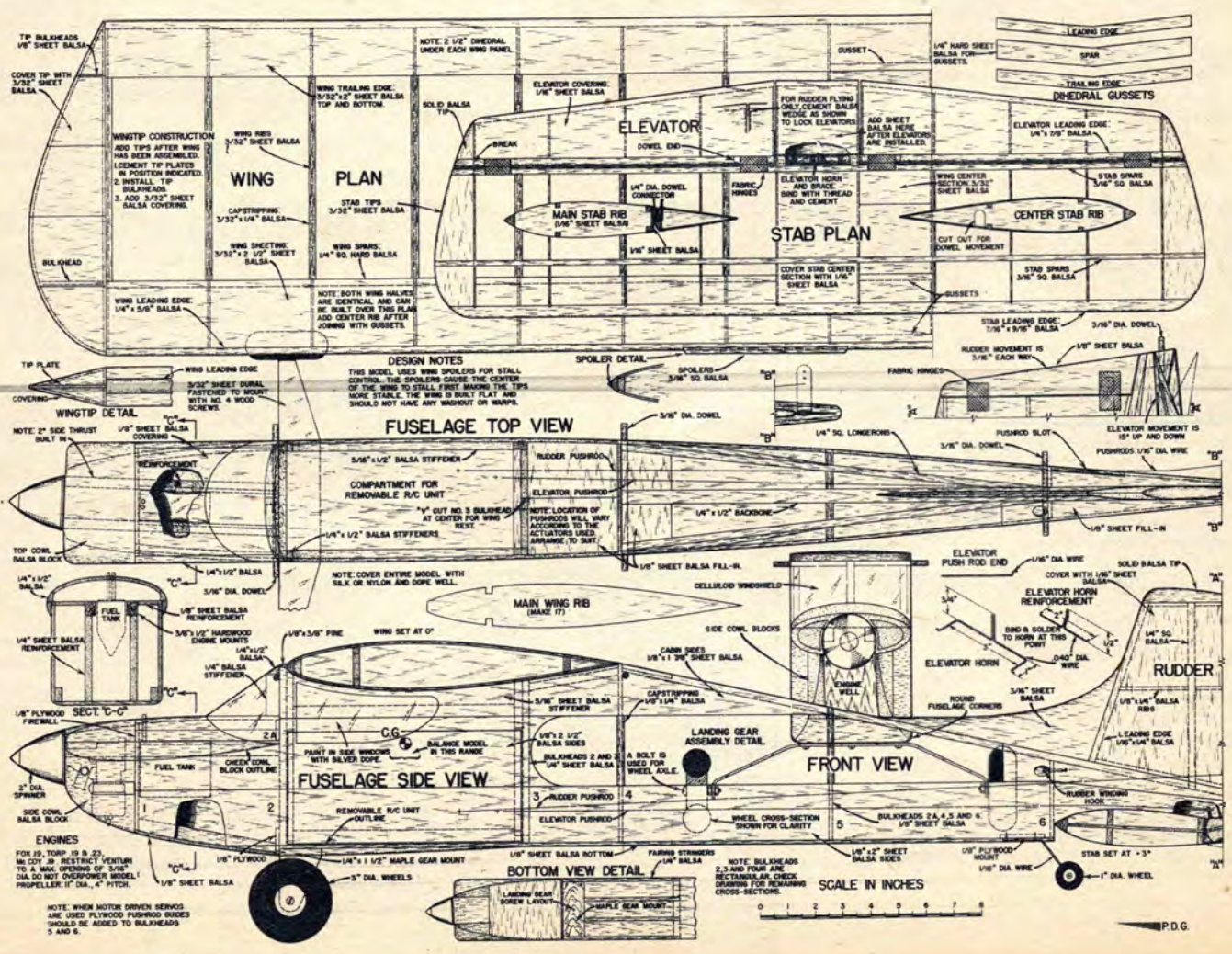
Inverted flight is the roughest of all maneuvers to accomplish well. The very design factors which lend to good upright flight detract from a model's performance while inverted, yet upright is most important so we just can not allow it to suffer. However, this model does fly inverted very respectably when properly trimmed. The first step is to trim out for absolutely straight flight while upright; any turning tendency will only be aggravated when you are inverted. The simplest way to enter it is by doing a half inside loop and applying down elevator at the top until the model is trimmed out for inverted flight. Remember that *both* the elevator and rudder controls are reversed when inverted.

The tail spin is by far the most spectacular of all maneuvers and this model will perform one well. To enter the maneuver the engine must be at a very low speed or else dead, any engine power at all will pull the model out of the spin before it can start. Under this condition the model is forced into a vicious stall, at the very top of the stall up elevator is held on while full rudder is applied. With these controls held the model will fall off on one wing with a complete loss of lift and on into the tail spin. Once in the spin the rudder can be released and the spin will continue.

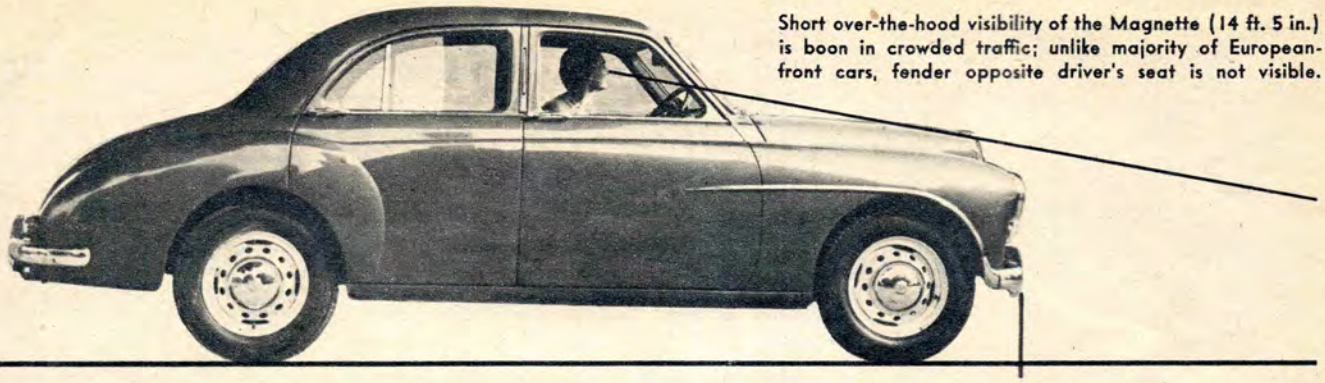
To come out of the spin full down elevator is applied until the spin stops and a dive starts; at this point neutralizing the controls will bring about normal flight once more. Just remember that the only control which is effective in a spin is *down elevator*, everything else is futile and nothing else will start the recovery! There are of course other maneuvers which can be accomplished with this model; however, these are the basic ones from which all others are started, so once you learn these you will be in an ideal position to try your hand at anything that you might dream up.

SPECIFICATIONS

Wing span: 65½ in.
Wing chord: 12 in.
Wing Area: 775 sq. in.
Fuselage: 45 in. long
Weight: 4 to 5 lbs.
Power: .19-.23

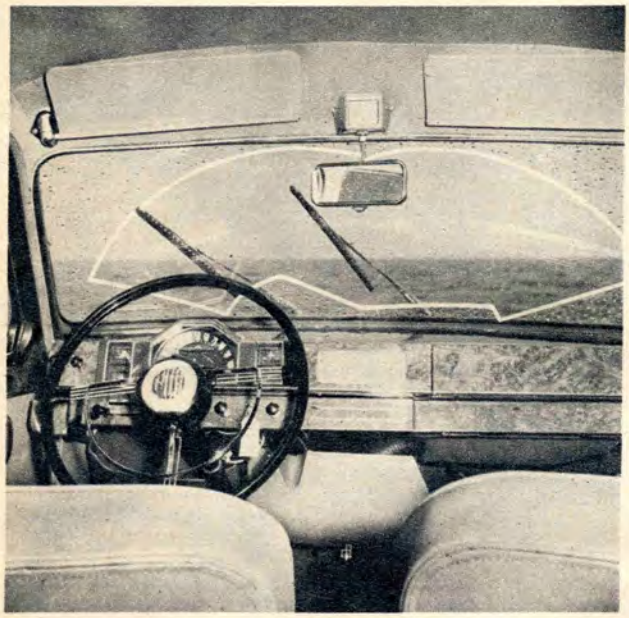


P.D.G.



Short over-the-hood visibility of the Magnette (14 ft. 5 in.) is boon in crowded traffic; unlike majority of European-front cars, fender opposite driver's seat is not visible.

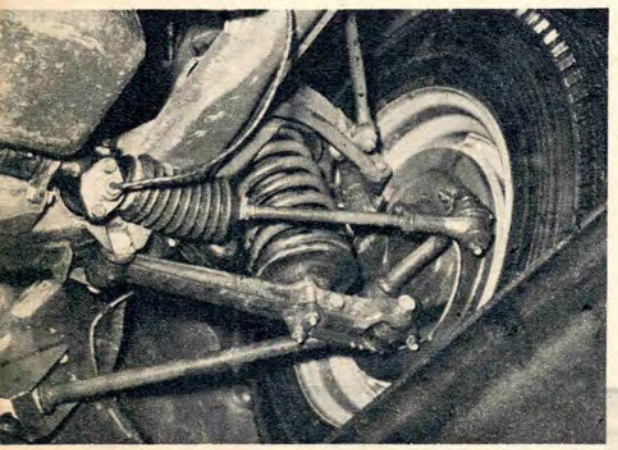
We drive the MG



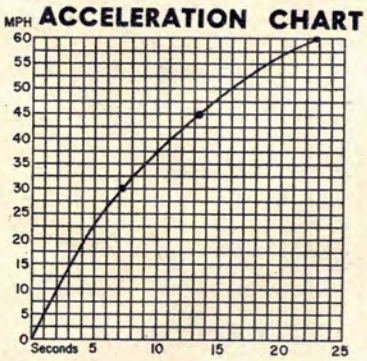
Driving rain during tests proved value of wiper set-up. Overlap pattern eliminates completely any blind spots in center. Unfortunately, the wipers leave about three inches of unwiped surface on either side of windshield. Rear view mirror has tilting device to eliminate glare.

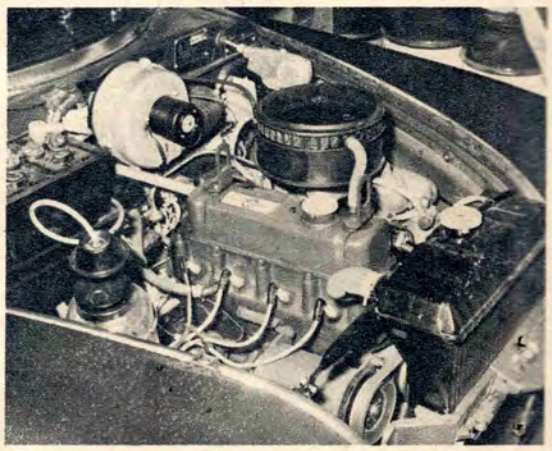
■ Considering its superb handling ease and excellent roadability plus the fact that price includes gas tank locking cap, electric wipers-fuel pump, triplex safety glass all around, fine leather upholstery, and rust proofing (similar to domestic Bonderite), the Magnette at $2675 is a fair buy. It's handy to park and to garage, stops on a dime without more than the slightest trace of a nosedive, rides well without being sloppy, and couples economy with reasonably good performance. As for comfort, there's little to be desired, and the distinct note of elegance in good taste and extremely good coachwork would seem to offset the price and the only really bad point—an inadequate heater.

One can safely cruise the Magnette over long distances at 60 to 65 miles per hour and average a thrifty 22 to 26 miles per gallon. The fuel tank holds approximately 11 U. S. gallons. Aluminum alloy pistons, pushrod operated valves run off a three-bearing camshaft which is chain driven, and a 1½ litre engine and a 3-bearing crankshaft distinguish this modern 4-cylinder powerplant which



Like all modern cars Magnette has independent front suspension consisting of coil springs and hydraulic shock absorbers which, on this car, are located inside the springs. Torsion bars, diagonal lower member in picture, effectively control roll and sway, and combined with 2¾ lock-to-lock turns of steering wheel give the light car exceptional roadability and handling characteristics. Cornering hard at 30 mph, test MG rolled not more than 4 degrees—no tire squeal.





The small engine is not a copy of the familiar MG powerplant but a brand-new unit developed by BMC (British Motors Corp.) It is equipped with two S.U. carburetors. Round object by 12 V. battery is fan for heater. Jar is windshield washer tank.

Front view shows traditional MG grille rounded out on Magnette. Extra lamps are fog lights that most cars in England use.

Body is an example of fine workmanship and finish, with just enough chrome to miss gaudiness. Wheels have holes for brake cooling.

Test car furnished by J. S. Inskip, Inc., New York City: Eastern U.S. MG distributor

MAGNETTE

By JOE WHERRY

has plenty of pep for the sort of family sport and fun driving for which this car is intended.

The doors stay in the open position, the engine is quiet for a four-banger, and the ladies can even learn to change a tire due to the sensible four jacking points distributed one to a corner. Domestic manufacturers should be able to come up with a jacking system, for with few exceptions foreign cars are so built that you can safely hoist the darn things without fearing that they'll topple over and crush the daylights out of you.

The Magnette's chief appeal will be to those who can spare three or four hundred extra dollars without feeling the pinch in order to have something that makes the neighbors give that *what-is-it?* look. The Magnette must be considered a car for the fun driver who doesn't mind shifting into *third* from *top* (fourth) on a long pull. On the other hand, don't let a Magnette owner talk you into a twisty impromptu race where there are hairpin turns. On such a course, the Magnette is at home.

BODY & CHASSIS SPECIFICATIONS

Wheelbase	102
Tread: front; rear	51; 51
Length overall	169 (14 ft. 1 in.)
Width overall	63
Height overall	58
Ground clearance	6
Turning circle dia.	37 ft.
Steer. wheel lock-to-lock	2¾ turns
Tire size	5.50 x 15
Weight (curb)	2476 lbs.
Power to weight ratio	41.3 lbs. per hp.

NOTE: All dimensions in inches unless otherwise stated

This is definitely a 4-passenger car as far as adults are concerned. Maximum leg room in driver's compartment is 42", seat is 50" wide. Maximum leg room in rear is 44", seat width 50". Armrests act as door pull. Foot pedals are pendulum mounted.

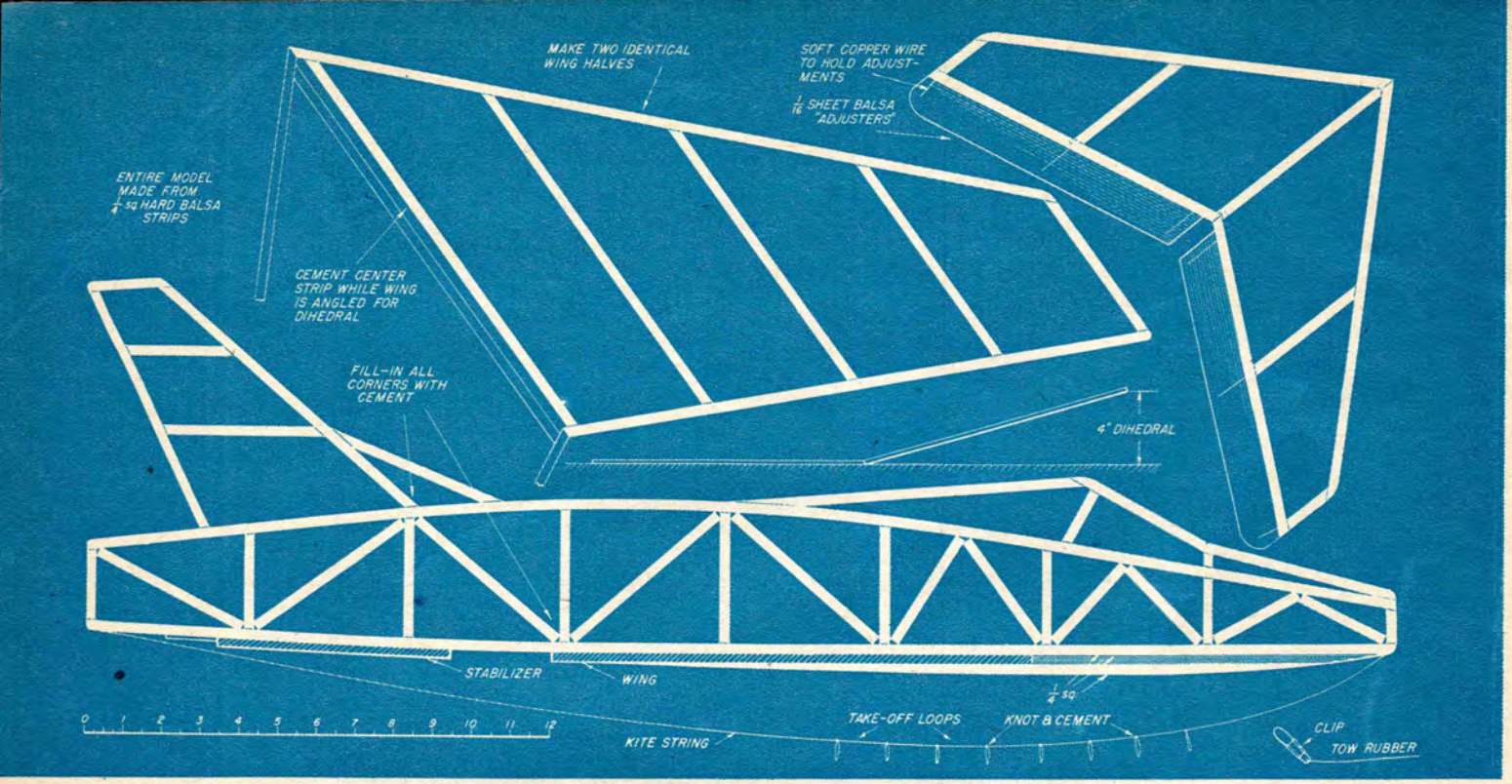
Luggage compartment is generous for a car of this size. Total width is 38"; with spare wheel, available room is 28"; depth 26" height 25". Car comes equipped with complete set of tools.

ENGINE SPECIFICATIONS

Cyls., valve set-up	4 in-line, overhead, pushrod operated
Bore and Stroke Displacement	2.875/3.5 90.84 cu. in. (1489 c.c.)
Compression ratio	7.15 to 1
Power output (max.)	60 brake hp. at 4600 rpm
Carburetor	Two S.U. semi-downdraft; a manual choke control is fitted on dash
Fuel pump	S.U. electric
Transmission	Manual, floor shift, 4-speed with synchromesh on 2nd, 3rd and 4th
Clutch	Borg & Beck single dry plate, operated with servo type hydraulic boost
Rear Axle	Hypoid type gears
Piston speed at max rpm	2683.3 ft/min.

NOTE: As this is written, the single model is the four-door sedan described herewith; there is no other model. New engine may eventually power the MG TF sportscar.
All dimensions are in inches unless otherwise specified.

Stylewise, the Magnette shows an evident attempt by its British makers to produce a car not too foreign-looking to us.

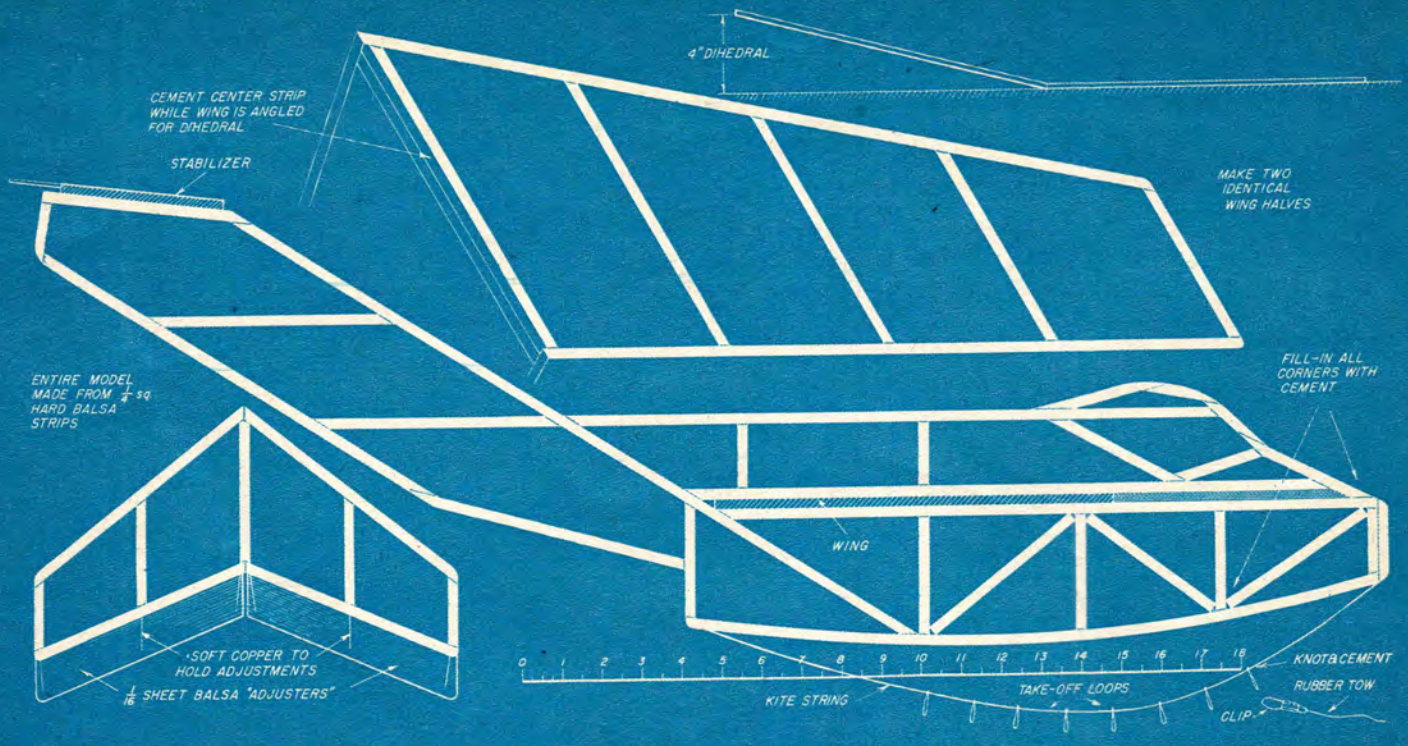

MAKE TWO IDENTICAL WING HALVES
SOFT COPPER WIRE TO HOLD ADJUSTMENTS
1/16 SHEET BALSA "ADJUSTERS"
ENTIRE MODEL MADE FROM 1/4 sq HARD BALSA STRIPS
CEMENT CENTER STRIP WHILE WING IS ANGLED FOR DIHEDRAL
FILL-IN ALL CORNERS WITH CEMENT
4" DIHEDRAL
STABILIZER
WING
1/4 sq
0 1 2 3 4 5 6 7 8 9 10 11 12
KITE STRING
TAKE-OFF LOOPS
KNOT & CEMENT
CLIP
TOW RUBBER

"Killer" COMBAT KITES

■ Ever flown "killer" kites? When these semi-scale profiles are aloft you'd swear a MiG-19 and F-100 were in mortal combat! Object is to cut your opponent's kite string. Using 50-50 mixture of cement and dope, glue model railroad ballast sand to the 50′ of line nearest kite. Glue 2 feet at a time; glued string picks sand off newspaper, shake off surplus.

Both sides of all surfaces and fuselage are "dry" covered with Silkspan. Glue paper to balsa with dope; don't dope the finished kite. Remove warps.

Start flying with line in middle loop on bridle string. If calm, move string toward rear; windy, toward front. If you don't get enough "climb" bend adjuster-elevators up. As wind increases move hook forward and bend elevators up. Rigged and balanced for kite performance, model can't glide forward, so when string is cut it descends as if dethermalized.


4" DIHEDRAL
CEMENT CENTER STRIP WHILE WING IS ANGLED FOR DIHEDRAL
STABILIZER
MAKE TWO IDENTICAL WING HALVES
ENTIRE MODEL MADE FROM 1/4 sq HARD BALSA STRIPS
FILL-IN ALL CORNERS WITH CEMENT
WING
SOFT COPPER TO HOLD ADJUSTMENTS
1/16 SHEET BALSA "ADJUSTERS"
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
KNOT & CEMENT
KITE STRING
TAKE-OFF LOOPS
RUBBER TOW
CLIP

Rubber-Tow Kite Flite provides plenty of fun when the wind's too strong for R/C or F/F activity. As towline you use T-56 flat 1/16" rubber. Let kite out from hand in nose-up attitude, playing out rubber "line" as fast as wind velocity permits. When line begins to stretch-h-h-h let kite go downwind as you hold rubber tight. When rubber stretches to capacity kite will ZOOM overhead. Then play out more line, kite again goes downwind. Hold line tight, kite soars overhead when rubber tension overcomes drag. Altitude depends on background obstacles; rubber will stretch about 5 times its length.

Full-size construction drawings for both the semi-scale F-100 and MiG-19 combat kites are available from Hobby Helpers, 770 Hunts Point Ave., New York 59, N. Y., as part of Group Plan #754 (50c).

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ATH-7 Veteran ☐ Non-veteran ☐

LATEST DEVELOPMENTS in Miniature Rocket Propulsion

■ Since our last roundup of Jetex miniature rocket engines (Sept. '52 A. T.), there have been some interesting changes in types available, fuel used, addition of augmenter tubes, and even in actual technique of using the engines. As is known by owners of older types of Jetex engines—the 100, 200 and 350—fuel is still made to fit them, and spare parts are available; these particular models are no longer sold as complete units, however. Instead, the line now consists of five numbers, the "35," "50," "50B," "150" Jetmaster and "600" Scorpion.

Jetex powerplants are true rocket motors, deriving their thrust from the burning of solid fuel pellets. While engine casings naturally get very hot during operation, the jet efflux is not a trail of fire, as some might expect; actually, no fire at all can be seen, and there is very little smoke. The gases will not burn balsa wood held only an inch or two from outlet. Ignition is by means of a thin fuse which projects from jet outlet, and is lighted by a match, cigarette, or piece of dethermalizer fuse. Since the Jetex fuse throws off sparks as it burns, area under and just to rear of outlet should not be doped; each engine package includes a piece of thin sheet asbestos, which may be used to protect this area.

Another good protection method is to paint the area with "water glass," which you can obtain from drugstore. Waterglass will not go on over dope, so be sure to leave the areas you want to treat free of dope or cement. Aluminum foil may also be used for fireproofing.

To make certain the fuel is ignited by the fuse, it has long been the practice to coil fuse into several flat turns that are laid upon fuel pellet face; then a gauze washer is pressed into engine body to hold the two in close contact, and rear cap of engine put in place, after end of the fuse is threaded through the jet opening. A better method has lately been in use which makes for easier loading, assures more certain ignition of fuel, and makes for a more true line of thrust. The latter is very important in many models; it has been found in some cases that the tiny copper wire upon which the fuse material is molded deflects thrust to a certain extent—sufficiently so in some cases to cause a poor flight. To prevent this, practice now to coil the main length of fuse on *both* sides of gauze; then a separate length of fuse is poked into jet opening after cap is in place. This latter short piece of fuse is sure to be ejected when fuel ignites, and the method makes it much easier to load the engine, particularly those types which have a lengthy jet nozzle, as is the case with the Jetmaster.

Fuel should be kept as dry as possible; like all combustible materials, dampness has a bad effect on it; it is quite safe to dry fuel pellets out over a hot air register or a radiator. The fuel is safe to handle; many users saw fuel pellets in half, to get shorter flights, when trying out a new model. Some feel the pellets ignite more surely from the fuse if the face is scraped with a knife as the engine is being loaded, to present a "fresh" surface.

Most new users of Jetex engines do not realize that power from the units increases toward end of a flight. Like any jet engine, the Jetex has little or no efficiency when it is not in motion; the faster the model travels, the more efficient the Jetex becomes, which is another reason why models powered by this type of engine are prone to loop at the latter part of a flight. This is also the reason why you should launch a Jetex job with a good heave—not a puny push. The faster you launch it, the better the jet engine works and the faster the plane will start to climb. Most of the Jetex units also have a higher initial thrust before they settle down to a good steady push; this doesn't bother a majority of models, however, but just helps to get them up to flying speed more rapidly.

Now a rundown of the various sizes of Jetex engines and their special features.

JETEX 35. Smaller and lighter even than the 50, this tiny unit is constructed in about the same way. It has one special feature not found in any other Jetex engine—the charge is shaped in such a way as to eliminate large thrust increase that comes when fuel pellet is nearly burned out. The latter is hollowed at *forward* end (the end away from the jet opening) and a cone-shaped shield fits into the case ahead of pellet.

JETEX 50. This one was covered in our last story on these motors; present production is just the same as before. It comes packed with six fuel cartridges, ample supplies of fuse, spare gaskets, cleaning tool, and full instructions.

JETEX 50B, also known as the "Contest Special." A new addition to the line, this model is about ⅛" longer than standard 50, and may be distinguished by a brass-colored ring around jet. It uses same fuel as the 50, and gives about the same thrust and duration. However, it is packed with a very neat little augmenter tube in three sections; depending upon model in which it is used, different lengths of tube may be desired. The lengths are—bellmouth section, 2"; bellmouth plus one straight piece, 4"; plus two straight pieces, 6". The augmenter tube is made of seamless aluminum tubing and whole thing weighs about .2 oz. The parts fit together tight and true, and may be used as main structural backbone of rear portion of a model.

JETMASTER (150). This, covered in our previous article, continues unchanged. Actually quite a complicated design, the Jetmaster has a true venturi jet, which is turned from solid metal. Because of its design and high power output for size, it is imperative that the jet orifice be kept very clean; a special metal reamer is provided for the purpose. One reason for elongated jet of this unit and the tapered rear portion of casing, was to get maximum good from addition of an augmenter tube. The latter is sold separately, and consists of two shaped half sections, which may be crimped together to form a tube, and a bellmouth section. Thrust increase with latter alone is the greatest, and may be as high as a third. The bellmouth is 2" long, and when the tailpipe is added,

(*Continued on page* 62)

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RIVIERA $3.50
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BUCKEYE JR. $3.95
LENGTH: 14" For .020 to .074 Eng.
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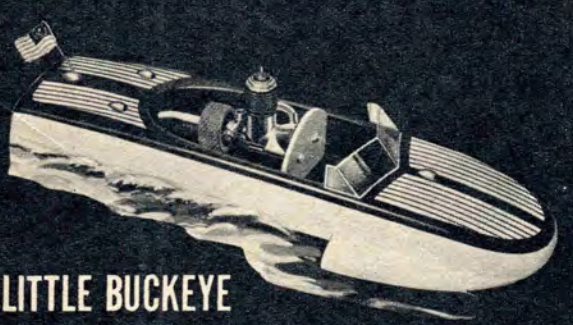

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LITTLE MERCURY $1.50
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Carved fuselage model — at this sensational low price. It's completely prefabbed . . . easy to assemble, easy to fly. Jim Walker's U-Control.

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WACO CABIN $1.50
For .020 to .049 Engines
Imagine! This carved fuselage biplane "beauty" for only $1.50. It's semi-scale. Features Jim Walker's U-Control, all prefabricated parts.

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Famous escort fighter model. Completely prefabbed. Features carved balsa fuselage, formed balsa wing, etc., etc.

LITTLE DEVIL $1.50
SPAN: 18" For .020 to .074 Eng.
An economically priced U-Control model. Easy to build and fun to fly. Prefabbed parts include: carved balsa fuselage & wing, etc.

CYCLE CHATTER

Conducted by JOE WEBER with H. A. THOMAS

Joe, here, shows you how he travels to work daily

■ Last issue we agreed that most bicycle trouble is chain trouble. Now to get on with our adjustment and inspection procedures.

Never attempt adjustments on geared rear hubs without close reference to the maker's instruction sheet. The gear shift adjustment, however, should be periodically checked and maintained. Occasional light oiling is usually all that is required. If the hubs jump gear or suddenly slip, proceed as follows: With the gear control in "N" or normal position, adjust small knurled sleeve at lower end of shaft cable until shoulder (just beyond end of the chain, on shaft that is screwed into the axle) is flush with end of the axle. Shaft with chain attached has been screwed in as far as it will go and backed out only enough to align the chain with the shift cable. If knurled sleeve has been taken up to maximum without proper adjustment, unscrew it halfway, go to top tube clip holding cable sheath coming from the control, loosen and slide it forward to take up all slack, then readjust gear control as previously described.

Brake inspection is a must for safety. Lubricate coaster brakes only lightly. If they squeal or grab in operation, rinse with a squirt of kerosene, cleaning up the excess before it reaches the tires. By all means see that the bolt holding the brake torque arm strap is tight.

No slack in the bottom bracket bearings should be tolerated. On foreign bikes the bearing cup is adjustable and suitable tools are provided. On these machines, the notched lock ring (opposite chain wheel) is loosened, the cup tightened snugly, then the lock ring is retightened by bumping the wrench with a block of wood (not a hammer) since there are only a few threads on the ring. Recheck for slack and drop four to six drops of oil in the oiler atop the bracket.

With the bicycle on its back, place a couple of drops of oil in the top and bottom fork cups, turn the bike upright, grasp the handlebars and lift. There should be little or no slack. If necessary, loosen the locknut and screw top bearing cup down snugly (some machines have an adjustable cone here) and carefully tighten the locknut. The fork assembly should be free enough to fall in either direction when the cycle is lifted.

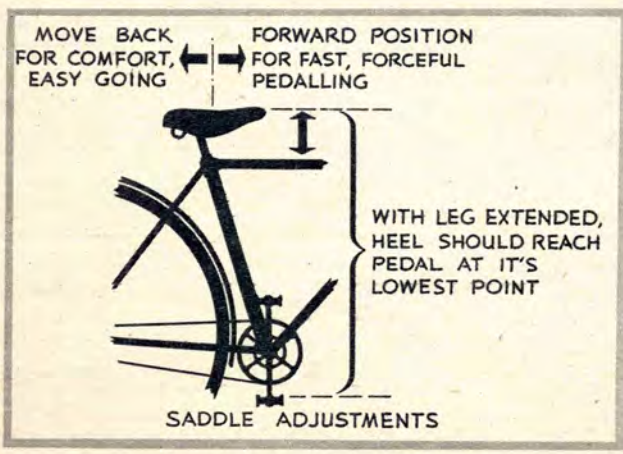
Out-of-round wheels are generally caused by loose or missing spokes. The juvenile stunt of "jumping curbs" will result in this failing. Special spoke wrenches, handy and inexpensive, are best suited for spoke tightening. If careful use of the wrench does not correct the trouble, go to a reputable cycle repairman.

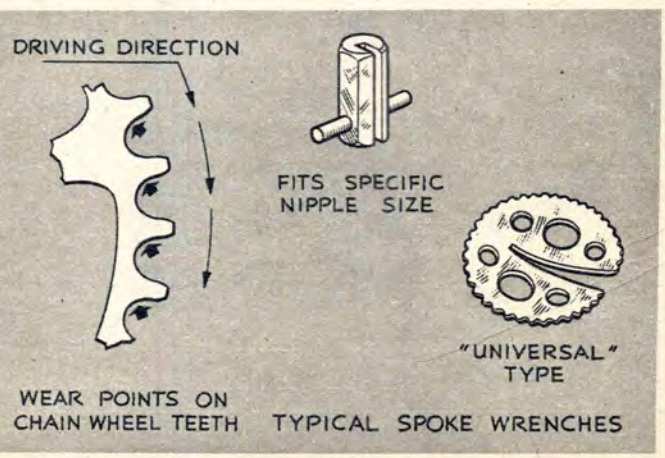
Install new spokes after removing the tire since spokes as a rule are too long and must be cut off above the nipples. Use sturdy diagonals and dress down the ends smoothly with a file.

The leather saddle should be periodically treated with saddle soap followed by good quality leather dressing or conditioner. Never force-dry a wet saddle with artificial heat.

Finally, inspect and if necessary replace the bar grips. Never ride without them, for the bare bar ends, in an accident, can cause serious injury. Check the rear reflector—another "must" item—and tighten loose fenders, stays, etc. If there are lights, clean the reflectors, inspect wiring and fastenings.

We'd be pleased to help in any possible way with questions on cycling sent to this magazine and welcome news of individual or group activities in cycling.


MOVE BACK FOR COMFORT, EASY GOING
FORWARD POSITION FOR FAST, FORCEFUL PEDALLING
WITH LEG EXTENDED, HEEL SHOULD REACH PEDAL AT IT'S LOWEST POINT
SADDLE ADJUSTMENTS



Engineering

(*Continued from page* 29)

read about the Colorado Plateau, where a young fellow named Charlie Steen stumbled on what became a strike worth hundreds of millions just in dollars. In the Lake Athabasca region in Saskatchewan 150 companies are busy as the result of the fabulous strike there. Last March, a Toronto consulting engineer discovered near Blind River a field that promises to be as rich in uranium as the one in Colorado.

What will be the uranium picture by the time *you* become an engineer? Obviously, a strike may happen any time, almost anywhere. Or there may be long intervals between strikes. We know that our Atomic Energy Commission has a contract with Canada to buy all that country's uranium production until 1963. Of course, it is possible that uranium may be superseded in regard to atomic energy—that entirely new methods in producing atomic power may be developed.

Far more definite is today's—and tomorrow's—need for engineers in petroleum production. This is undoubtedly the greatest shortage in the mining branch. The reason has to do with the rapid advancements in oil in recent years, improvements in refining, the new uses for the products. Part of the job is locating the "black gold." In this country exploration work is constant; east Texas is still the world's largest producer. In the upper Amazon basin U. S. firms have begun large-scale operations in areas that may make Peru a major supplier of oil. And rigs are being set up in Alberta, Canada.

Just a couple of months ago you probably read about Bell Labs announcing a successful solar battery—but don't shy away from petroleum engineering because you're afraid oil will soon be replaced by other sources of energy, whether solar or atomic. Research is constantly uncovering new uses for oil. Mr. Frank M. Porter, president of the American Petroleum Institute, very effectively points out that 2500 different chemicals can be extracted from oil and gas. Another estimate has it that one and a half million different compounds may be obtained from petroleum if commercial uses can be found for them.

Nor should you overlook the genuine opportunities ahead for metallurgical engineers. New kinds of power are calling for new kinds of metal—alloys, for instance, that can withstand the high temperatures connected with jet engines. Titanium has possibilities as one of tomorrow's new general metals; it is twice as strong as steel and half as heavy. Much research is being done on this and other items of promise, for use in everything from jewelry to machines and transportation vehicles.... Industry will welcome tomorrow's metallurgist with open arms.

Perhaps you'd like to become a chemical engineer. If so, you have selected a branch whose opportunities are without limit—for the future of chemistry is unbounded. In just the last twenty years the number of chemical engineers has increased tenfold. Much of our industry is dependent on chemistry, and new derivations and products are constantly creating new divisions in industry, meaning additional chances for the chem. eng.

For instance, not so long ago most of our alcohol was derived from molasses. Today, alcohol from petroleum is giving that process competition. Or take plastics.

(*Continued on page* 57)

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For .049 and similar engines, **$1.50**
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NEW! HOLLAND HANDY WRENCH Two-ended wrench for loosening or tightening glow plugs and removing cylinders—without damage. Accurately engineered to fit most engines. Keep one handy in your tool box!... **25¢**

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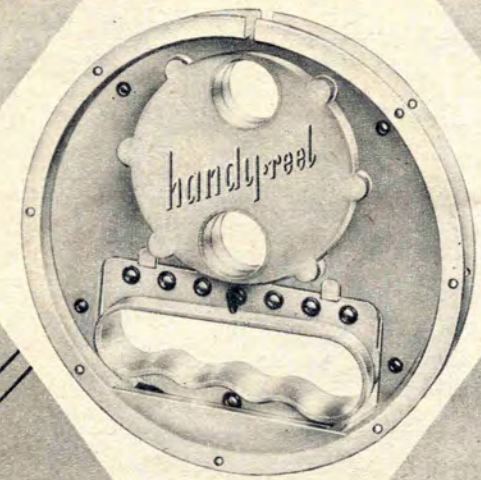

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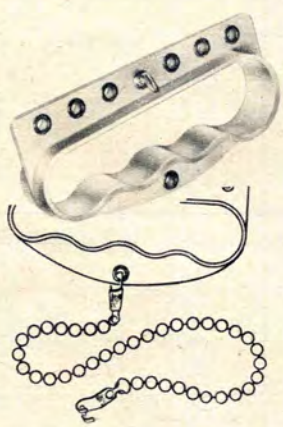
HANDY REEL ***including handle*** — Handy Reel conveniently stores the lines . . . connected to the handle and ready for thrilling flight! Because of its large diameter there is no possibility of kinking the lines. Reeling in and out is smooth and flawless! Made of durable Styrene plastic, with metal reinforcements. **$2.95**

HANDLE ***without reel*** — You'll get the full "feel" of your plane and maneuver with thrilling new sensitivity and control with the Handy Reel Handle! Delicate control line adjustment can be made at the forward edge of the handle. The handle grip is shaped to the contour of the hand to give you the full comfort and delicate awareness of every motion of your plane. Ruggedly constructed of high impact Styrene, with metal reinforcement at critical points, Handy Reel Handle withstands tremendous pulls and punishment. **.75**



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520 Fifth Avenue • New York 36, N. Y.

BROOKLYN TRUCK DRIVER DETAILS TRUCK MODELS

■ William H. Lake drives a Mack tank truck for the Shell firm in Brooklyn, N. Y. As relaxation, he builds miniature trucks and trailers, he has now 10 tractors, 9 trucks and 11 trailers of all makes which took 7 years to complete in his spare time. All are ¼ inch scale and constructed of balsam wood, cardboard, tin cans, colored paper, pins and dress snaps. Bill also collects truck literature, has over 3000 books and pamphlets on the subject.

Some of the trucks and trailers built by Lake are shown here. They are accurate in every detail. Only parts not built by him are running gear and steering wheels; even these have to be worked over in order to achieve realism. Quite a number in the Lake collection are Mack trucks, his favorite rig; one is his own design.

From the top, these examples of Shellman Lake's creative efforts are an old-time "A.B." model Mack which carries oil drums, a Corbitt diesel-engine powered tractor that took a maximum 70 hours' building time, a tandem enclosed van (trailer) that was constructed in 45 hours, and a Mack CH tandem truck model of the big 3,000 gal. capacity gasoline carrier which occupied 45 hours.

(*Continued from page* 55)

The vinyl plastics have provided us with a substitute for leather. Plastics created from silicone resins have made rockets and guided missiles possible—for they can resist the high temperatures involved. Or consider synthetic fibers from coal, petroleum and the like: the material of your fancy new slacks represents only the beginning of possible developments in this field. Just as a feather in the wind, it might be noted that today the petroleum industry hires more "comical engineers" (as the undergraduate chemical engineer likes to libel himself) than any other kind.

Right here, it might be explained that it's the chemical engineer who takes the lab discoveries of chemists and turns them into commercial realities. It's his job to take such new finds or developments as penicillin or high-octane gasoline and make them useful to us, to learn how to manufacture them economically and on a large scale.

The industrial application of chemical processes is widespread—playing an important part in industries having to do with food, rubber, grass, paper, iron, steel and many other things. And not only does our man "engineer" a process like extracting vegetable oils from beans or seeds with solvents, but often he must devise new instruments or equipment to meet new problems.

Nucleonics needs the chemical engineer. There are probably more of his type employed at the atomic energy plants than any other branch of engineering or science. And have you ever heard of the Atomic Industrial Forum? This organization, composed of key representatives of industry, is busy exchanging information among companies and functioning otherwise to help convert atomic energy to peacetime use.... The more the whole program expands, the louder will be the call for chemical engineers.

Industry in general is working behind the scenes to make tomorrow a better and more prosperous world; for it knows that what helps one helps all. The immense research programs it carries on imply expanding opportunities for *you*—and much of that research is the fundamental kind. At General Motors, for example, Mr. Charles F. Kettering, the veteran engineer and scientist, has an entire staff trying to discover "why the grass is green." Cracking nature's secret of photosynthesis might mean chemically harnessing for all mankind the prime energy of the sun. As pointed out by Mr. McCuen, the manager of GM's research labs, solar energy falling upon one square mile of the earth's surface per day is equivalent to 400,000 gallons of oil or 2,000 tons of coal . . . which themselves represent the sun's energy one or more steps *removed*.

The functions of the engineer are broadening. Mr. Maynard M. Boring, manager of General Electric's Technical Personnel Divisions, has said: "That (industrial or manufacturing engineering) is a field that is going to grow very rapidly in the next few years because production has become so extremely complex. You simply cannot depend on the fellow coming up through the machine shop to take over the complexities of today's production. It's a big new field for new engineers."

The industrial engineer is the man who is concerned with the efficient use of labor, machines and material. Specializations include safety, plant layout, time and motion. Industrial engineers may come from practically any of the five main branches.

Suppose you like science and math but feel you'd be better off in the general managing end of business. There is news for you. More and more industries are filling their staff positions with the engineer-trained—jobs until recently not considered part of engineering, such as sales and market research. Now over 40 percent of *top* management in industry are men who were originally trained as engineers. In this respect, they are replacing the banker and the lawyer.

The man with an engineering background—the trained ability to analyze all factors involved in a problem and on their basis evolve a solution for it—is being increasingly sought in such fields and professions as government work, cost accounting, investment advising, sales and advertising campaign directing and the like.

Whatever your interest in engineering, there are certain things you can and should do now while still a high school undergraduate. First, take as much math and science as you can, both to meet college requirements and to make the road ahead a little easier. The actual number of units varies among the engineering colleges; this information may be had from the individual schools; your teacher, principal or guidance counselor will be glad to help you find things out. Don't neglect history and social sciences; you'll want to be well-rounded. By all means don't neglect English. A sad fact: certain large companies today are sponsoring classes in English composition, including business letters, for their "backward" executives. A foreign language—French, German, Spanish—can be a definite asset. Another fact: firms sending men abroad often have them first take a course in a particular foreign tongue.... So why not get the jump on the opposition by preparing yourself now?

The following booklets and pamphlets are suggested reading; a number contain further source material:

"Engineering—a Creative Profession." 25 cents. Published by the Engineers' Council for Professional Development,

(*Continued on page* 62)

What's in the Name . . . Tinker Air Force Base?

(Oklahoma City, Okla.)

This huge Air Force Base is named after Major General Clarence L. Tinker, commanding general of the 7th Air Force, who was killed during the battle of Midway in 1942. Gen. Tinker, one-eighth Osage Indian, was born at Elgin, Kans. in 1887, and received his military education at the Wentworth Military Academy, Lexington, Mo. After four years as a Second Lieutenant with the Philippine Constabulary he entered regular Army service in 1912. After World War I Tinker became interested in aviation and received his pilot training at March Field, Calif. Served as Assistant Military Attache with U.S. Embassy in London; he was awarded the Soldiers Medal for rescuing a companion from a burning plane. In 1927 he served on the Air Corps Staff and during the next twelve years was commanding officer of various domestic fields, finally commanding the 7th AF in Hawaii.

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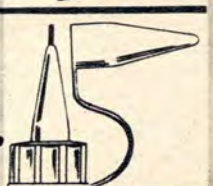

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We've been mighty slow getting this oft-requested model to you, but it's worth the wait!

By ROY L. CLOUGH, JR.

Channel Winger

■ The main idea behind the channel wing configuration is that if air can be kept flowing over a wing section lift will be produced regardless of the forward speed of that wing through the air.

So the Custer Channel uses a semi-circular airfoil section with the propeller mounted just inside the trailing edge to insure a strong draft through the channel which is independent of forward motion. Thus there is a section of the wing which can never stall—as long as the motor keeps running. This, Custer reasoned, should allow very steep take-off and landing patterns and greatly reduce ground run.

There seems to be little doubt, on the basis of our tests, that the channel reduces take-off run and does indeed produce some static lift. It will also operate well beyond normal stalling angles without paying off. The increase in static lift in flight—a condition which occurs when the model is put up in a four-cycle and suddenly leans out—is noticeable as a sudden ballooning, similar to that which takes place when a dummy bomb is dropped from a stunt job. The model not only scoots ahead faster, it also rises up a foot or two. This does not make it difficult to control; the effect may be explained by noting that, all things being equal, it takes more up-elevator to fly a heavy ship than a light one. When the motor leans out in the channel job it suddenly gets quite a bit "lighter."

Don't let the U-shaped wing scare you. It is quite easy. The first item needed is a standard gallon size fruit juice can (try a hotel or restaurant) to serve as the mold for the laminated spars. Wrap a layer of wax paper around the can, soak the 1/32" spar blanks in warm water for a few minutes and layer up the spars using Weldwood Plastic resin glue or something similar. Do not use non-water-soluable model cements. When the final lamination is in place pull the spar together tightly with a band of cellulose tape around it and the can. Allow the spars to dry thoroughly, at least overnight, in a warm place.

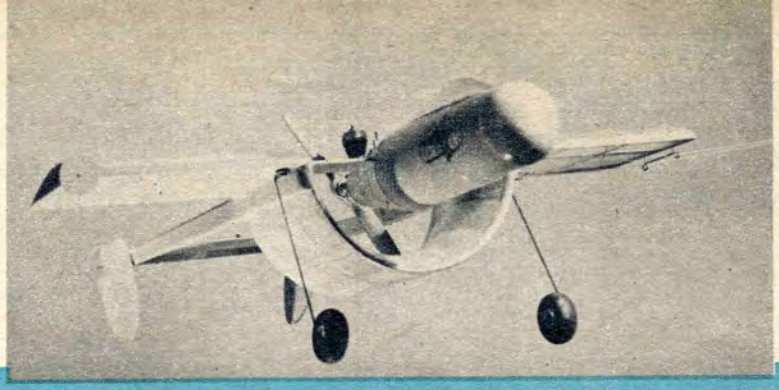
Once the spars are set the wing construction is the same as for any three-spar wing, but easier because the semi-circular spars practically align themselves. The two outer panels are built separately. Cover the inside of the channel, slide the plywood anchor beam in place and attach the outer panels. Now we cover the under side, put in the tail booms, fins and tail plane and bolt the landing gear in place. Cover the remaining area of the wings' upper surfaces, inserting about ¾ ounce tip weight in the leading edge of the outboard wing.

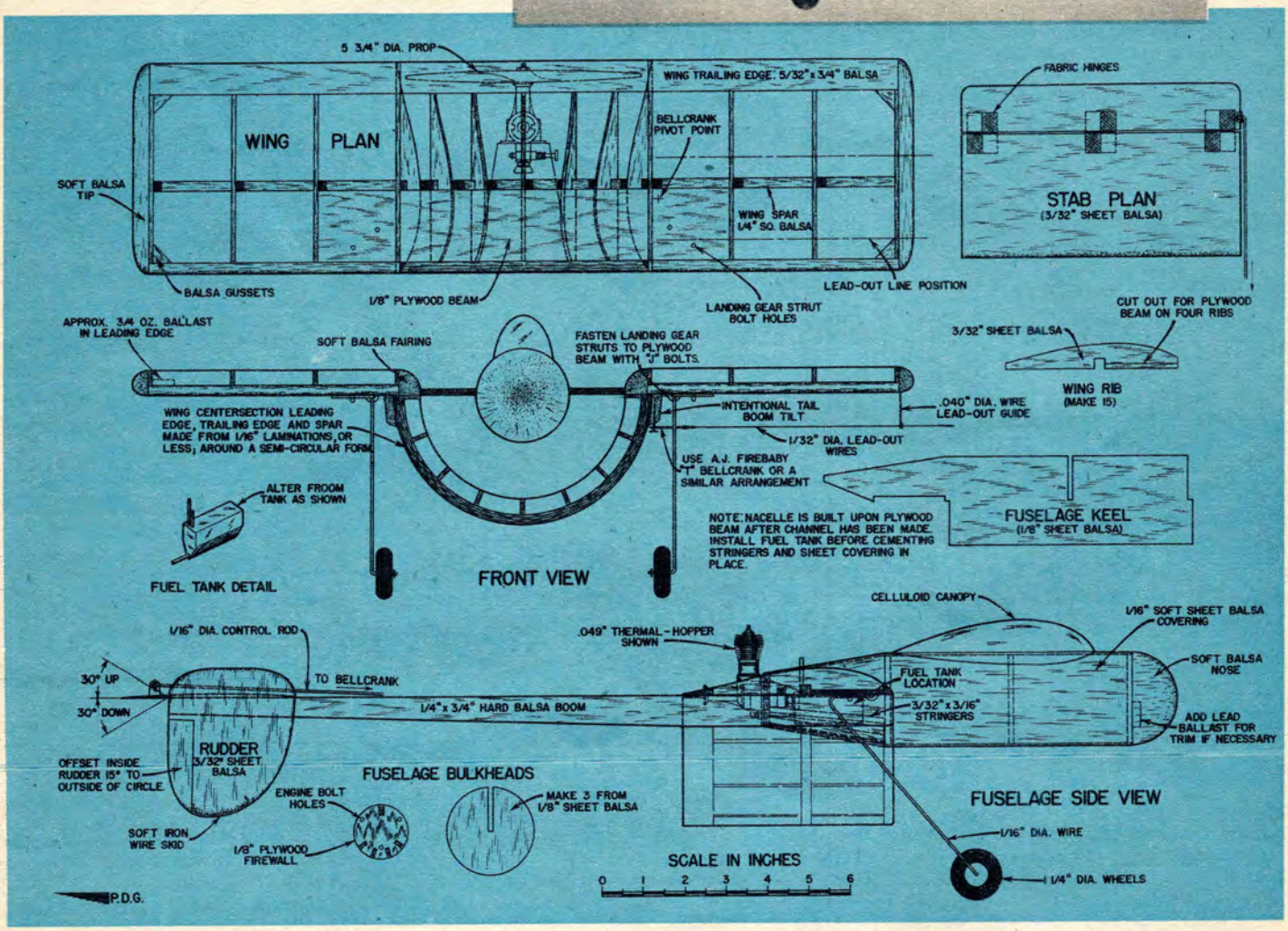
The nacelle-type fuselage is next. Cut the keel from ⅛" sheet and the necessary bulkheads. Note that the engine bulkhead is plywood; there is a method to be followed here because of the Thermal Hopper's mounting system. First, cement the keel, with its attached balsa bulkheads to the anchor beam. Next fit the motor carefully to the plywood bulkhead, cement the mounting nuts liberally in place. Now remove the engine and stick the bulkhead to the keel, bracing it as shown with ⅛ x ¼" strips. Use plenty of cement on this assembly and let it dry thoroughly before proceeding. Replace the motor and put in the tank. Note on the plan the style we used, adapted from a standard wedge. A little trimming and fitting may be necessary here and the tank is held in place with bits of scrap cemented to box it in. Now cover the nacelle with either 1/32" sheet balsa or construction paper. The engine will vent through the hole where the needle valve pokes out. Carve a nose block as indicated and ballast it so the CG lies somewhere between the front wire and the leading edge of the wing.

Not much ballast is required because of the length of the nose, but don't slight it! A Berkeley bubble canopy, 5" long completes the deal which may be doped to your favorite color scheme. The control system uses a T control plate similar to and interchangeable with the one used in the "Firebaby." The line guide is simply a bit of twisted soft iron wire.

You will be able to do a lot of low speed stuff with the model not to be expected from a conventional type. Starting the motor may seem difficult at first, but this is merely acquiring the knack of bouncing the prop back against compression with the ball of the thumb so that it kicks out running the proper way.

Full-size plans for building the Channel Winger are part of Group Plan #754A, Hobby Helpers, 770 Hunts Point Ave., New York 59, N. Y. (50¢)




WING PLAN
5 3/4" DIA. PROP
WING TRAILING EDGE, 5/32"x3/4" BALSA
BELLCRANK PIVOT POINT
SOFT BALSA TIP
WING SPAR 1/4" SQ. BALSA
BALSA GUSSETS
1/8" PLYWOOD BEAM
LEAD-OUT LINE POSITION
LANDING GEAR STRUT BOLT HOLES
FABRIC HINGES
STAB PLAN
(3/32" SHEET BALSA)
CUT OUT FOR PLYWOOD BEAM ON FOUR RIBS
3/32" SHEET BALSA
WING RIB (MAKE 15)
APPROX. 3/4 OZ. BALLAST IN LEADING EDGE
SOFT BALSA FAIRING
FASTEN LANDING GEAR STRUTS TO PLYWOOD BEAM WITH "J" BOLTS.
WING CENTERSECTION LEADING EDGE, TRAILING EDGE AND SPAR MADE FROM 1/16" LAMINATIONS, OR LESS, AROUND A SEMI-CIRCULAR FORM
INTENTIONAL TAIL BOOM TILT
.040" DIA. WIRE LEAD-OUT GUIDE
1/32" DIA. LEAD-OUT WIRES
USE A.J. FIREBABY "T" BELLCRANK OR A SIMILAR ARRANGEMENT
ALTER FROOM TANK AS SHOWN
FUEL TANK DETAIL
FRONT VIEW
NOTE: NACELLE IS BUILT UPON PLYWOOD BEAM AFTER CHANNEL HAS BEEN MADE. INSTALL FUEL TANK BEFORE CEMENTING STRINGERS AND SHEET COVERING IN PLACE.
FUSELAGE KEEL
(1/8" SHEET BALSA)
CELLULOID CANOPY
1/16" SOFT SHEET BALSA COVERING
1/16" DIA. CONTROL ROD
TO BELLCRANK
.049" THERMAL-HOPPER SHOWN
30° UP
30° DOWN
1/4"x3/4" HARD BALSA BOOM
FUEL TANK LOCATION
3/32"x3/16" STRINGERS
SOFT BALSA NOSE
ADD LEAD BALLAST FOR TRIM IF NECESSARY
RUDDER 3/32" SHEET BALSA
OFFSET INSIDE RUDDER 15° TO OUTSIDE OF CIRCLE
FUSELAGE BULKHEADS
ENGINE BOLT HOLES
MAKE 3 FROM 1/8" SHEET BALSA
FUSELAGE SIDE VIEW
SOFT IRON WIRE SKID
1/8" PLYWOOD FIREWALL
1/16" DIA. WIRE
SCALE IN INCHES
0 1 2 3 4 5 6
1/4" DIA. WHEELS
P.D.G.

RESEARCH PANEL TO AID HOBBY DEVELOPMENT

■ Announcement by Air Trails HOBBIES that it is establishing a "Reader Research Panel" has been met with quick approval in many quarters. About one thousand young men will be selected to serve on the Panel.

RRP membership does not obligate one in any manner. Each member will be asked to participate in special questionnaire surveys to determine his reaction to various types of hobby merchandise, promotions and club activity. It is expected that through Panel participation members will make a significant contribution to the general advancement of all hobbies and wider public support of the mechanical-type youth hobbies such as modelplane building and flying, model boating and model car racing.

If you would like to be among those considered for membership, fill out the reporting application here and mail it to this magazine. A membership card will go to all those selected to serve on the panel to show that they represent all U.S. hobbyists.

By participating in various studies, you will enable our editorial staff to keep Air Trails HOBBIES the magazine you want, and also help America's top model manufacturers design the engines and kits you need. Use the coupon below.

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Stabilizer area 67 sq. inches
Length 27 inches
Weight 5½ oz.
Engine .049 cu. inch disp.

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What's Ahead for R/C

By DR. WALTER A. GOOD

■ Anyone who sticks his neck out and makes a prophecy on what will happen in the future ought to have his head examined. Of course, with neck so far out, that should be easy. Perhaps we can hope that no one will remember when the time comes to assess the accuracy of the predictions presented here. In any event we won't claim the 80 percent accuracy of prediction as done by a popular radio commentator. Still, we might hesitatingly mention that we did forecast coming events in the R/C world several years ago and it didn't turn out too badly.

Let's approach the prediction of things to come in R/C from a scientific viewpoint. The method is called extrapolation. This means drawing a line between two points and extending, or extrapolating, the line beyond the last point and into the future. The first point is several years ago, say 1949, and the second point is now nearing mid 1954.

What was R/C like in 1949? The Nationals were in Olathe that year and the R/C event had about 30 entries. Most were "small" ships with about six-foot wingspan and single-channel control. All were on "ham" frequencies, and how many were legal will not be discussed here.

The 1953 Nationals had 140 R/C entries, with the great majority in the four to five-foot class. An increase of over four-to-one. Ninety percent were on the 27¼ and 465 mc. bands. The license-free operation band is one reason for the increase. A number of multi-control ships were there, using the Rockwood and Schmidt five-channel tuned reeds and also the Bonner compound escapements in conjunction with the Curry two-channel audio receiver. A very significant new type of acrobatic R/C plane was de Bolt's symmetrical wing job. Definitely a new trend, and it really did execute outside loops. Also different was Warren Carter's tiny scale biplane which buzzed around under realistic control.

From these two starting points let's throw caution to the winds and "extrapolate" into the future.

It's probably on the conservative side, but *over 200 R/C entries look easily possible at the 1954 Nationals.* Mr. R/C Event Director, please don't claim you were not warned!

From here it looks like *the large majority of R/C ships for the next few years will be rudder-only and the ships will be small, around four foot span.* We know the current R/C rules are to be used through 1954, but it appears clear that a *separate competition class for rudder-only must be established soon.* It is surprising that the current R/C rules, which definitely favor multi-control ships, have not drawn any protests from the rudder-only boys. Even though the spot-landing points seem to favor rudder-only fans, the multi-control ship can easily outpoint them without even nearing the spot.

I predict the multi-boys will come into their own in '54. In fact it seems the multi-ships are going in two directions. The first is the *six-to-seven foot size equipped with very complete and elegant controls,* the type flown by the Mustangs. Improvements in tuned reeds toward increased reliability and also the use of electrical tone selection can be foreseen, which will make the flight of this type even more realistic than it is now. The second direction is toward small multi-ships such as demonstrated by Lou Andrew's Beam employing rudder, elevator and engine controls on a single channel by means of the ingenious compound escapement of Bonner's. *We can expect to see a real increase of small ships with ingenious devices to endow them with multi-control.*

The writer sees one functional trend which may not appeal to the realism school. This is the leaning of the better R/C stunt models toward the generally

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motor, flying equipment, liquids not supplied.

Complete bellcrank assembly.
Elevator horn with mounting bolts.
Wheels. Wheelocks.
Hinging material. Finished push rod.
Finished landing gear,
Finished wing tip line guide.

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PAUL K. GUILLOW
WAKEFIELD MASS.

TWICE A WINNER!

Jack Balke has won first place honors in combat at two different meets, with his Guillow designed Trixter Profile Trainer. His first trophy was won at Calumet Park, Chicago, July 19th, 1953 and the second at Springfield, Ill., September 20, 1953.

Jack, who is an active member of the Model Buster's Club of Streator, Ill., says "I wouldn't have won except for my Trixter Trainer and K & B 32 Motor."

accepted controline (how did that word get in here?) stunt job. *Future R/C stunt jobs will look like large Ukie stunt jobs.* Perhaps deBolt will add flaps soon too. This model employs symmetrical airfoil, low aspect wing with only a few degrees of dihedral, very short moment arm, small stabilizer and large elevators. The acrobatic rules are forcing us in this direction. If you do or do not like this let the AMA R/C Committee know your desires.

Don't overlook R/C flying scale ships. The time has arrived. We've learned that all that dihedral and stab area is not necessary—with good R/C and the proper trim. A good reliable single channel—look to the Wag tone control for this—and multi-channels are available. These make it worthwhile for the modeler to spend that extra time required for a slick scale job.

R/C combat flying is undoubtedly the most thrilling of all aero-modeling events. *I predict that R/C combat will become standardized with small expendable planes and single channel sets in crash-proof containers.* Perhaps some easy-to-build kit job should be considered for this honor. Contest Director: include R/C combat in your next meet.

To top the list, *how about an R/C helicopter?* It would seem that an R/C helicopter could be flown right out of your backyard. The tuned reed system ought to provide enough controls. Just a lot of clever work and "stand clear of those whirlin' blades"!

HOBBY CALENDAR

List your hobby club's public shows here! Advise "ATH" not less than 90 days in advance. Give telephone of contact man if possible.

Address of contact man is in the same city as site of event unless otherwise specified.

CALIF—San Diego, June 13. Aeroneers' PAA-Load air-model contest. G. G. Wagner, Sr., 6851 Newbold Ct.
SO CALIF—June 13. F.A.S.T. Club's air-model team races. Keith Storey, 8509 Hiquera St., Culver City.
PENNA—Erie, June 13. Erie MAC air-model meet. H. N. Parker, Jr., 2133 Fairmont Pkwy.
IND—Wabash, June 13. Exchange Club air-model meet. N. R. Lavengood, Box 183. Office phone, 394; home, 900.
ILL—Cordova, June 13. Ill-Iowa Aero. Assoc. air-model meet by Rock Island-Moline M.A.C. E. J. Christenson, 808 27th Ave., Moline.
ILL—Chicago, June 13. Chicago Prop Nutz air-model free flight record trials. P. J. Sotich, 3851 W. 62nd Pl., Chicago 29. REliance 5-1353.
MICH—Detroit, June 13. Miniature race car contest (tentative). Carl Noward, 1384 Berdan Ave., Toledo, Ohio.
MICH—Ann Arbor, June 13. Airfoilers-Exchange Club air-model meet. Albert Temple, 116 S. 7th St.
NJ—Milville, June 13. Garden State Aeronauts' air-model meet. Andrew Canino, 116 Quince St., Vineland.
CONN—Meriden, June 13. Model Maniacs vs. Lufbury Circleers air-model club competition. C. A. Orrill, Jr., 47 Carpenter Ave.
GA—Atlanta, June 18-20. Greater Southeasterns air-model championships. Lloyd Wason, 315 Church St., Decatur.
NJ—Perth Amboy, June 19-20. P.A.MAC "pylon" R/C closed course air-model meet. Robert Peru, R.D. 4, Rahway.
TEXAS—Beaumont, June 19-20.—Exchange Club air-model meet. Don Still, 790 Liberty Ave.
IND—Anderson, June 20. Midwest Miniature Race Car Society meet. Carl Noward, 1384 Berdan Ave., Toledo, Ohio.
MD—Hagerstown, June 20. Exchange-"Herald-Mail"-Fairchild air-model Flying Circus. John Young, Box 691.
OHIO—Cleveland, June 20. American Miniature Racing Car Assoc. meet. Carl Noward, 1384 Berdan Ave., Toledo 12, Ohio.
CALIF—Ontario, June 20. American Miniature Racing Car Assoc. western regionals. Carl Noward, 1384 Berdan Ave., Toledo 12, Ohio.
NY—Buffalo, June 20. Flying Bisons air-model field dedication meet. Howard Thomas, 47 Stenzil St., N. Tonawanda.
IOWA—Cedar Rapids, June 20. Jaycess annual John Pavlis memorial air-meet. P. M. Marchal, Jr., 1837 8th Ave., S. W.
MD—Baltimore, June 27. Balsa Butchers U-control air-model Olympics at Friendship International airport. F. G. Stroh III, 16 Drumpiont Rd., Glen Burnie.
PA—Pittsburgh, June 27. Aero Club-PAL Clubs model air show. M. J. Thomas, 246 Morrison Dr.
CALIF—Sacramento, June 27 (shifted from June 13). N. Calif. Free Flight Council air-model meet. John Lenderman, Box 216, French Camp.
ILL—Cordova, June 27. Rock Island-Moline M.A.C. air-model free flight contest. E. J. Christenson, 808 27th Ave., Moline.
CALIF—Los Alamitos, June 27. Long Beach Thunderbugs PAA-Load air-model meet. W. A. Ellison, 14100 Chadron Ave., Hawthorne.
MINN—Makato, June 27. Exchange Club-Modeleers air-model meet. W. B. Thomas, Box 713, Lake Crystal.
UTAH—Salt Lake City, July 3-4. Active Modelers annual air-model meet. J. P. Yardley, 2836 S. 15 East.
LA—New Orleans, July 3-4. Gulf States air-model meet. P. A. Burvant, 77 Spanish Ft. Blvd.
CONN—Southington, July 4. Meriden Model Maniacs vs. Lufbury Circleers air-model club contest. C. A. Orrill, Jr., 47 Carpenter Ave., Meriden.
OKLA—Tulsa, July 4. Glue Dabbers air-model free flight meet. W. H. Kehr, 4940 N. Johnstown.
NC—Concord, July 4. Recreation Commission-Modelaires air-model meet. J. M. Kilgore, 232 Guy St.
ILL—Belleville, July 4. American Miniature Racing Car Assoc. western regionals. Carl Noward, 1384 Berdan Ave., Toledo 12, Ohio.
GA—Atlanta, July 10-11. American Miniature Racing Car Assoc. southern regionals. Carl Noward, 1384 Berdan Ave., Toledo 12, Ohio.
MICH—Detroit, July 11. American Miniature Racing Car Assoc. contest. Carl Noward, 1384 Berdan Ave., Toledo 12, Ohio.
ILL—Chicago, July 11. Prop Nutz air-model meet. P. J. Sotich, 3851 W. 62nd Place, Chicago 29. REliance 5-1353.
NJ—Hackettstown, July 11. Rotary-Musconetcong Aero-Nuts air-model meet. Kenneth Setzer, 138 Main St.
MASS—Pittsfield, July 11. Exchange Club-Flying Maniacs air-model meet. R. L. Elliott, 48 Curtis Terrace.
SC—Spartanburg, July 11. Amer. Business Club's All-Dixie Championships air-model meet. C. H. Hutchins, Box 403.
TEXAS—Dallas, July 11. Cliff M. C. air-model meet. J. B. Hargis, 1102 W. Saner Ave.
ILL—Joliet, July 11. Exchange Club's flying circus air-model meet. G. F. Stearman, 604 Abe St.
NEER—Omaha, July 18. Kiwanis Club's air-model meet. Carl Ruchte, 5035 Bedford.
IND—Hartford City, July 18. American Miniature Racing Car Assoc. meet. Carl Noward, 1384 Berdan Ave., Toledo 12, Ohio.
WISC—Kohler, July 18. Flying Tomahawks free flight air-model meet. W. A. Lea, 1030 N. 14th St., Sheboygan.
OHIO—Greenville, July 18. Jaycee's air-model meet. Jim Trissil, 215 Wayne Ave.
WISC—Milwaukee, July 18. Flying Electrons R/C meet. Victor Weissbrodt, 2100 E. Webster Pl.
TEXAS—El Paso, July 19-23. Air Force World-Wide model airplane championships. Biggs AFB. Major R. P. Nelson, Information Services Office, 810th Air Base Group, Biggs Air Force Base.
OHIO—Toledo, July 25. American Miniature Racing Car Assoc. meet. Carl Noward, 1384 Berdan Ave., Toledo 12.
PENNA—Gettysburg, July 25. Modelplane contest sponsored by Gettysburg Model Airplane Club. J. H. Pitzer 9 Hanover St.
ILL—Chicago, July 27-Aug. 1. National Championship Model Airplane Meet. A.M.A, 1025 Conn. Ave., N.W., Washington 6, D. C.
CALIF—Elsinore, July 27-Aug. 5. National Soaring Contest. Includes modelplane events. L. M. Licher, 767 Haverford Ave., Pacific Palisades.
IND—Anderson, Aug. National miniature race car championships. Carl Noward, 1384 Berdan Ave., Toledo, Ohio.

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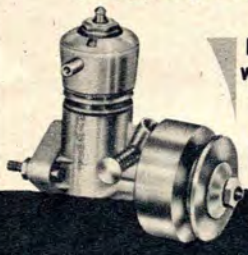

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R-100 RECEIVER
Shown actual size:
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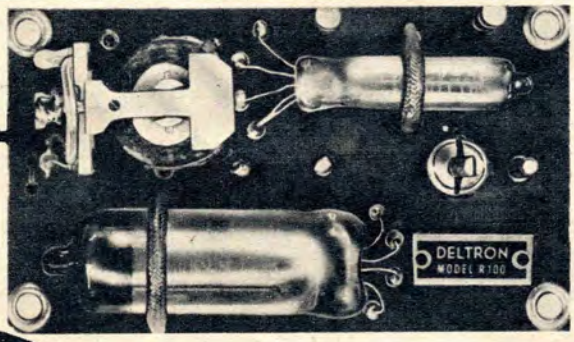
Weighs less than 2 oz. including plug



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NEW CIRCUIT gives safe control at great distances. Smaller. Lighter. Rugged-built for long life.

TWIN-TUBE RECEIVER idles at 0.5 mils, which is the first stage. When the transmitter is keyed, the current in the second stage, through the relay, jumps from 0. to 2.7 mils—3-times current required.

EASIEST TUNING. only one adjustment. No meters needed!

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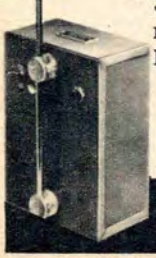

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(*Continued from page 57*)

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Latest Developments

(*Continued from page 52*)

length overall is about 13". The augmenter tube weighs .44 oz., and may be cut to any length desired, of course. It has the same added advantages as that for the 50B in preventing fuse sparks from charring fuselage; can be used as a structural member.

SCORPION (600). This is the real "hot rod" of the Jetex line. It produces considerably more than twice as much thrust as its weight, and this can be further increased by augmenter tube which is packed with it. Made entirely from turned parts, the Scorpion has an aluminum alloy barrel with integral fins, and a machined jet, something like the Jetmaster. The Scorpion is much simpler to load and to service than old Model

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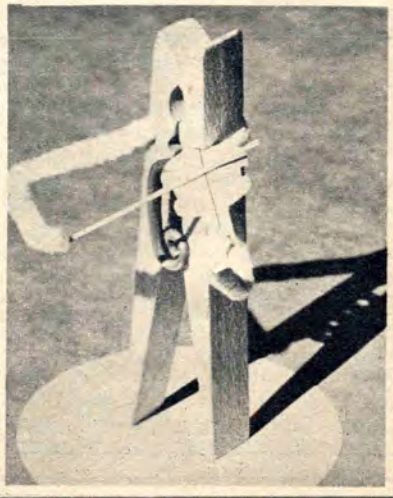
"The Virtuoso" by Tom Sappington, Levelland, Tex.: simple, imaginative.



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Long Island Gas Monkeys
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Contrailers
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Victor, N. Y.

350, previous high power number of the Jetex stable. It mounts by means of a single stud, and no special tool is needed to load it. The charges are of a special shape that practically eliminates the extra heavy push all Jetex engines give just after being ignited. The Scorpion now uses a red-colored fuel that has more power and same length of thrust duration. Same new grade of fuel, incidentally, is made for the Jetmaster as well.

The Scorpion outfit includes special igniting stick material with holder and a snuffer to put it out after the jet fuse has been lighted. The augmenter tube packed with this engine is of same diameter as that sold for Jetmaster, but has a total length of only 6"; it has one straight section, in addition to the 2" long bellmouth.

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Fast snap-action keying switch with 8 ft. cable and plug supplied.

Multipurpose meter switching circuit enables use of meter for checking 2 volt cell, B supply output, 0-50 MA range for transmitter tuning. Test jacks provided on panel to use meter ranges externally for checking of receiver, A & B battery, and 0-5 MA. Range for receiver tuning and relay setting.

All these features in a carrying case size only 5 x 9 x 6 high, wt. 10½ lbs. Case comes finished in durable black wrinkle paint with handle. Full ¼ Wave Sectional Whip Antenna with special quick disconnect mounting base.

Your initial low investment is your final expense. Many years of satisfactory service is guaranteed.

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Hobby Helpers Plan #554A which gives extensive construction information on this receiver, the McEntee Mini-Mac Receiver and Mac II Transmitter.

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The McEntee "Mini-50" Receiver Parts Kit. A complete package to build the 50 MC. version of the best single hard tube receiver available today, includes all parts, tube, drilled base and wound coils.....$ 6.95
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Essco's improved version of the Mini-Mac with hard tube 2nd stage. This results in a super sensitive receiver with reliable relay operation only available formerly with the expensive gas tube receivers.

Filament drain of 2 tubes only 80 ma. 1st stage idles at .8 ma., drops to .3-.4 ma. on signal. 2nd stage will trigger from 0-3 ma. using a 5000 ohm relay.

Tube life averages 1000 hours as compared to 5-20 hours of gas tubes. In fact, tubes will, with normal use, outlive your model.

Receiver weight less than 1½ oz. Mounted on base 1¾ x 2½.

Completed receiver assembled and tested ready for installation, less relay and batteries.....$13.95
With choice of relay; Kurman, Neomatic, or ED Regular $19.95

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North American's Dynatrol Transmitter and Twin-Tube Receiver

■ The Twin Tube receiver differs from most gas tubers in that it employs *two* such tubes, and utilizes them in such a way that their life is considerably extended over what you can expect from the normal single gas tube receiver. The first tube in the circuit operates as a regular super-regenerative oscillator, but the circuit values are such that it draws only about .5 ma. plate current with no signal, compared to 1.5 ma. in the single gas tubers.

The life of these tubes is dependent directly upon the plate current. The second tube acts solely as a relay tube. It runs at zero plate current except when a signal comes in, so it, too, may be expected to have very good life.

All components of the receiver, aside from the relay and current adjusting rheostat, are mounted on both sides of a printed-circuit plate. Five pins project from the underside, and make contact with five socket eyelets which are attached to a base plate. The latter is fastened into your model permanently; should the receiver need adjustment, you just pull it loose from the base plate—no leads need be unsoldered or broken.

The base plate has a variable resistor for setting the operating point of the oscillator tube, and thus adjusting overall operation of the receiver.

Tube leads are held in flea clips, with rubber bands to secure the bulbs. Tuning is by means of an iron-core inductance.

Receiver is sold less relay, but the range of current change is such that a wide variety of relays may be used, provided they are of proper resistance (5000-8000 ohms). The makers recommend the ½ oz. Neomatic relay, and sell one adjusted properly for the Twin Tube receiver. Shock mounting is not required for the receiver, though many users cement the base plate to sponge rubber, which in turn is cemented to the plane.

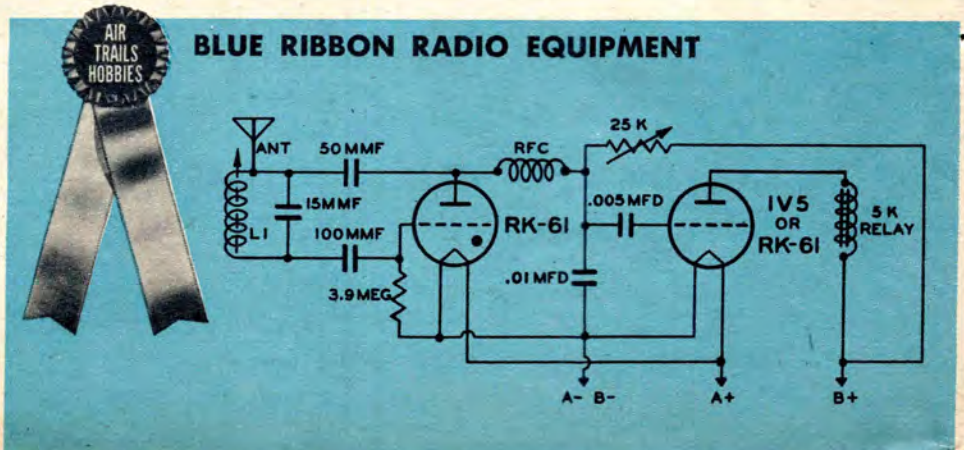
Receiver is also sold in kit form, and is extremely easy to assemble, since all "wiring" is already done for you, on the printed-circuit plate. All you have to do is solder the resistors, condensers, etc., into eyelets.

The kit is beautifully packaged, with all the small parts individually identified, to make things easy for the beginner. All parts, including the printed-circuit plate, may be purchased separately.

This type of receiver is very sensitive, not particularly fussy to adjust, nor critical as to antenna length.

Dynatrol transmitter also makes use of the printed-circuit principle, and by doing so, can be put into a very small case. The circuit is of the usual regenerative crystal-oscillator type, with a single pentode tube. All parts of the transmitter are attached to the top cover of the case, including meter, antenna insulator and key button. A regular single circuit jack is connected in parallel with the key, so that the user may employ a key on a long cord, if he wishes.

Even the tuning inductance is printed, being in the form of a flat spiral; capacitive coupling to the antenna is employed.



Tuning is accomplished by means of a small screwdriver poked through a rubber grommet in the cover of the case; it is not necessary to use an insulated screwdriver.

All battery connections are made by snap fasteners. The transmitter comes with antenna, tube and crystal. If purchased in kit form, you get the printed circuit plate, case with all holes punched, antenna, meter, etc. Here again, wiring is simply a matter of inserting resistor and condenser leads through eyelets, and attaching the battery cable leads.

As with the receiver, parts are identified so that the builder does not have to know the radio color codes, to do the job correctly.

Instructions for both kit and assembled units are very complete, the former including many drawings and photos to show assembly steps and part location.

Specifications

Transmitter: Dynatrol. Case size, less panel projections—4" x 3 5/16" x 5½" high. On-off slide switch for power, push-button to control signal. 3-section antenna, 16" long when collapsed, 40" when open. Uses single 3A4 tube and overtone-type crystal. Single tuning adjustment. B battery current meter on panel. Total weight, 3 lb.

Battery requirements: One 1½ V. battery (Eveready #720 or equiv.), A current drain—200 ma. Two 67½ V. batteries (Eveready #457 or equiv.), B drain with antenna installed—22 ma.

Receiver: Twin Tube. Overall size, including tubes and mounting plate; 2" x 2" x 1¼" high. Requires two RK61's. Adjustments for tuning and for oscillator plate current. Antenna length not critical. Weight including both tubes and the base plate, but less relay—1½ oz.

Battery requirements: Minimum sizes recommended; A—two pencells in parallel, 1½ V. at 100 ma. B—two 22½ V. batteries in series (Eveready 412 or equiv.), current drain with no signal—about .5 ma. With signal—2-2½ ma. Higher battery voltage may be used to keep older tubes in use longer.

NEXT MONTH
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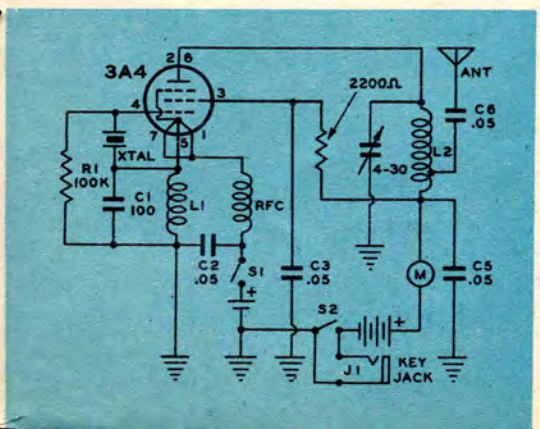
MAC 50 TRANSMITTER
Ham-band version of the Mac II Transmitter



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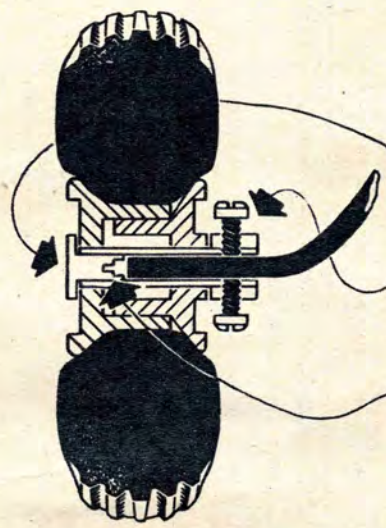

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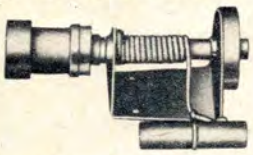
.008	2-52'	.60
.010	2-52'	.60
.012	2-52'	.60
.014	2-52'	.60
.016	2-52'	.60
.008	2-70'	.75
.010	2-70'	.75
.012	2-70'	.75
.014	2-70'	.75
.016	2-70'	.75
.012	2-125'	1.00
.012 Jet wire	1-100'	.25

This Month's Feature . . .



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Here's enough power to start even a pressure job. Easy to use. Attaches anyplace. Batteries last longer. NOW . . . better than ever!

STANDARD FLEXIBLE LINES

Dia.	Length	List
.008	2-35'	.65
.012	2-35'	.95
.012	2-70'	1.95
.015	2-52'	1.50
.015	2-70'	1.95
.018	2-52'	1.50
.018	2-70'	1.95
.021	2-70'	2.15
.018	2-85'	2.25
Flexible Lead Cable		.25
Flexible Lead ½A		.15
Class A Race Car Cable		.65

OTHER PYLON BRAND ACCESSORIES

Fuel Filter 25c
Nylon Hinges 15c
Plastic Fuel Pump..... 75c, 95c, $1.25
Pump 50c
Dacron ½A Controline..... 52'-25c
Bubble Canopies ..... 25c up
Self-locking Clips ..... 2 for 15c
Class A, B, or C Swivels..... 2 for 15c
½A Nylon Handle..... 39c
Nylon Spinners ..... 35c up
Nylon Wheel Collars..... 15c
Bellcranks, 3 sizes..... 20c up

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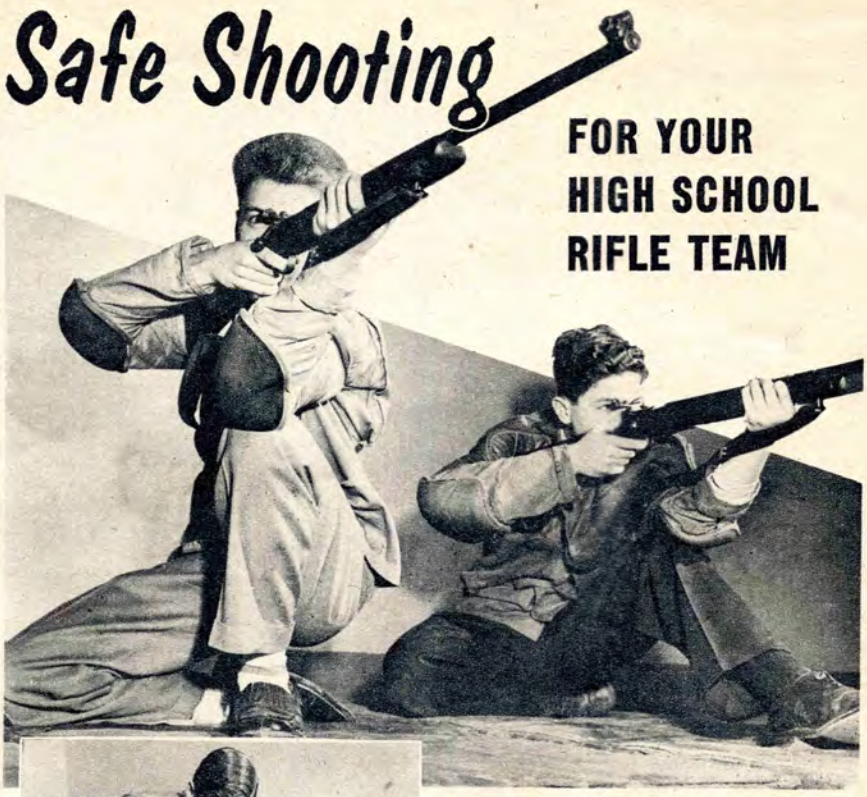
Safe Shooting

FOR YOUR HIGH SCHOOL RIFLE TEAM



■ Shooting is a great sport, yet improper handling of guns causes many accidents each year. More and more high school rifle teams mean a better trained group of safety-conscious young American shooters. One of the best such clubs is composed of Abraham Lincoln High School students in Brooklyn, N. Y., under the tutelage of Mrs. H. Shapiro, reputedly the only woman rifle team coach. Here the boys are taught the art of markmanship as well as proper care and handling of rifles. Benefits of such a program are obvious. Schools interested in starting rifle teams should contact National Rifle Association, Washington 6, D.C.

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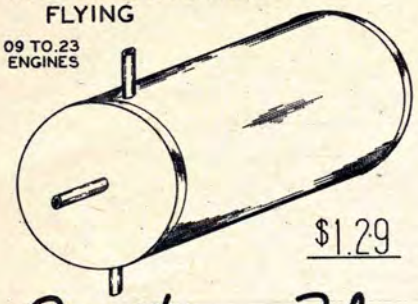

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IN BOTH KITS ALL PARTS ARE COMPLETELY PRE-CUT AND SHAPED. EASY TO ASSEMBLE WITH SELF ALIGNING SLOTS

THE SUPERSONIC MISSLE $3.50

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LENGTH 12"

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Add 15c To Cover Handling

Hobby-Model World

(*Continued from page* 20)

has long had the Robbers Challenge Trophy. We can remember the San Diego Airliners and Chula Vista club having such team meets, where each group sponsors a team. Top team scores are the winners, in each case stunt models were used, but there is no reason why combat teams couldn't perform. or speed teams.

The Los Angeles Thermal Thumbers have had their "Team Wakefield" contests and it can be said no sport anywhere in the world has had more intense rivalry than these contests. Of late in the Los Angeles area, team contests for gas have become quite the thing. "Steak and Beans" contests they are called, for the winners are fed steaks by the losers while the losers eat beans—nothing more.

The contest season in California has ushered in a spree of record performances. The Thunderbugs held an R.O.W. contest where no less than five records were set. Bobby Jones of the Hi Tailers posted an impressive 17 minutes plus for Class C Senior, Sal Taibi broke his own Class A record. The Bakersfield Annual saw Harry Gould break Jack Oxley's A/2 record—it's now 31:20.3. Dick Everett flew El Nordo to a new record of three maxs, then a 9:24.

This contest was unbelievable for no fewer than ten contestants posted 3 maximum flights. In Class B the three top times were over 28 minutes total, all three winners in Class A posted 3 sixes. Two accomplished the feat in C while only one—Harry Gould—performed the "Hat Trick" in A/2. Incidentally, too, the 3 Six-fourth Flub Club now has three

(*Continued on page* 72)

DARWIN DELUXE ALL METAL ADJUSTABLE CONTROL HANDLE

NOW, no more need to have 2 or 3 handles. The Darwin all-metal all-span handle is versatile enough to fly ½ A, speed, sport or stunt at a span of your own selection. Easy adjusting mechanism locks secure and will not fray cable. **$1.25 each**

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Special No. 0, 1-oz. for Team Racing $1.00 ea.

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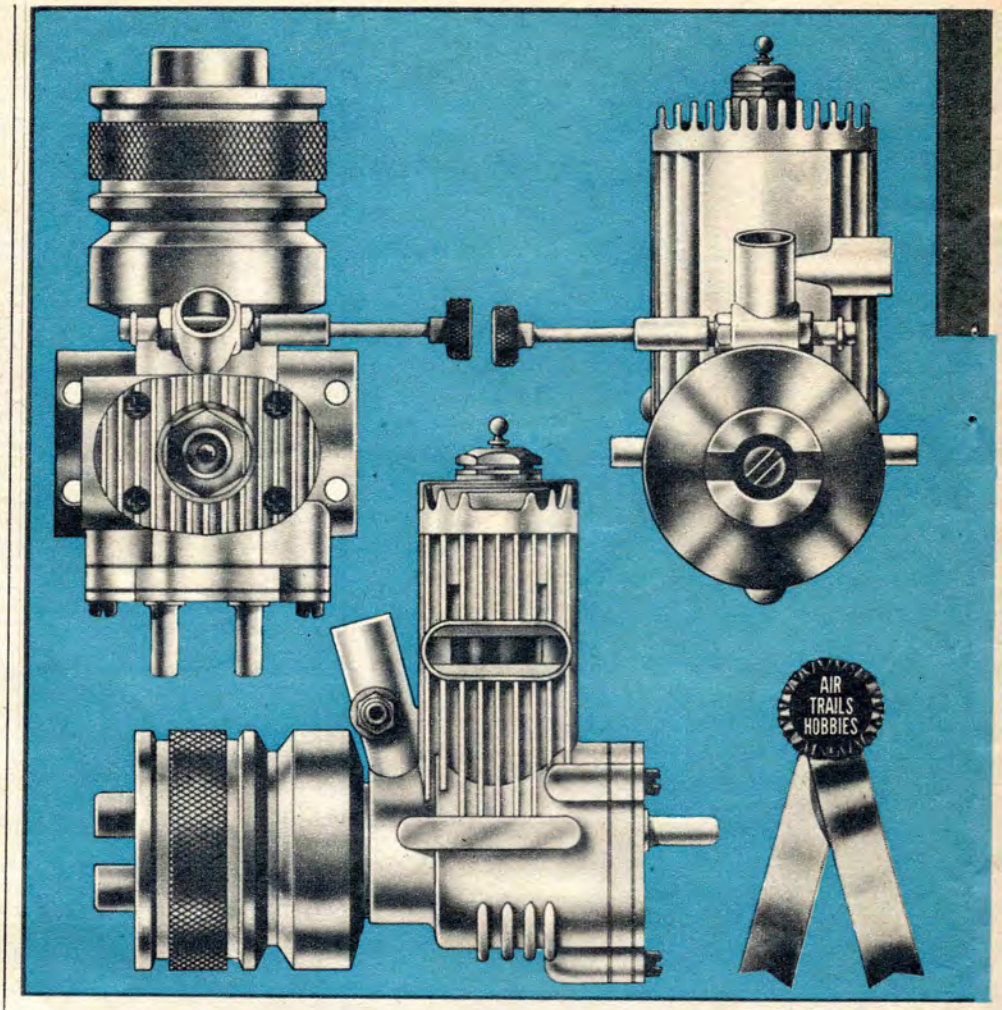

■ The Cameron .09 Marine Engine is perhaps the first inboard internal combustion model engine developed especially for powering model boats.

The Cameron is easily recognized from all other engines by its vertical cooling fins. These are properly proportioned for extra rigidity, freedom from stress and efficient thermal regulation. It is undoubtedly the heaviest and most rugged .09 engine ever produced in this country. The weight including fly wheel is approximately 10 ounces. Its extreme running smoothness is attained by an exceptionally heavy crankshaft counterbalance and a special recessed friction-drive fly wheel that mounts in such a manner that it extends rearward as well as forward, beyond the outer end of the main engine bearing. The main bearing is hardened steel, with approximately a ⅛ inch wall thickness.

The governor porting provides for maximum power development, steady pulling characteristics, ease of obtaining proper needle valve settings and the elimination of all possibility of the engine running away with itself when not under load. Needle valve adjustments are absolutely not critical. The engine starts very quickly whether hot or cold and may be primed either by priming directly into the exhaust port or by conventional choking methods, with equally good results.

Ability not to over-rev itself when not under load was immediately apparent during the test. The Cameron .09 will power the largest kit boat now available.

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"MINI" 27.225 MC Band TRANSMITTER with Petersen Crystal (value $4.85) and tube ($1.50) plus "MINI" RECEIVER with XFGI tube ($3.50) and Sigma Relay ($5.98) plus self neutralizing RUDDER CONTROL. Everything above, plus basic components such as resistors, condensers, etc., complete plans also included.

"MINI 27" KIT (everything above) **$14.95**

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AUTHENTIC SOLID SCALE MODELS
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CAMERON *Marine* ENGINE

The main engine block is die-cast of aluminum with deep vertical fins and is fitted with a hardened steel main bearing. The back cover is also cast of aluminum. A special metallic gasket is used between the crankcase and the back cover to allow proper heat transfer. The water-cooling back cover plate is stamped from aluminum and fitted with brass inlet and outlet pipes. It is separated from the crankcase cover plate by a fibre washer. Thick-walled cylinder liner is machined from steel, hardened and microlapped.

The finned cylinder head is die-cast of aluminum. It is fitted with a small gasket which allows metal to metal contact and transfers heat. Hardened steel crankshaft and counterbalance are machined in one smooth piece with the crankshaft end ground to a smooth finish. A round rotary shaft port is employed. Hardened and ground steel crankpin is made to form a spacer washer for the connecting rod. Connecting rod is of forged aluminum. The hardened and ground piston is of the straight baffle type and is relieved from a point midway at the wrist pin to the skirt. The steel wrist pin is fitted with brass pads to insure against cylinder scoring.

The fly wheel is machined from steel and is both knurled and slotted. It is friction driven, fitting a taper on the forward end of the crank shaft. It is securely held in place by a single round head machine screw. Its forward end is slotted to receive a ball and pin universal, as supplied with the drive shaft accessory kit, available for an additional $2.50. The brass needle valve body is relieved on the fuel entering side of the orifice to provide for ease and consistency in obtaining desired needle valve settings. Proper needle valve settings are maintained by use of a friction type threaded needle valve thimble, eliminating the minor vibrations of the needle point at the jet opening. . . . We feel that the engine will be capable of long life.

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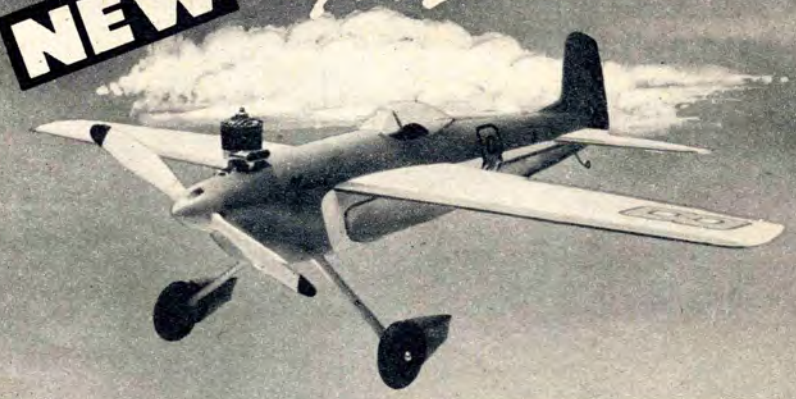

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FOR BEGINNER OR EXPERT!

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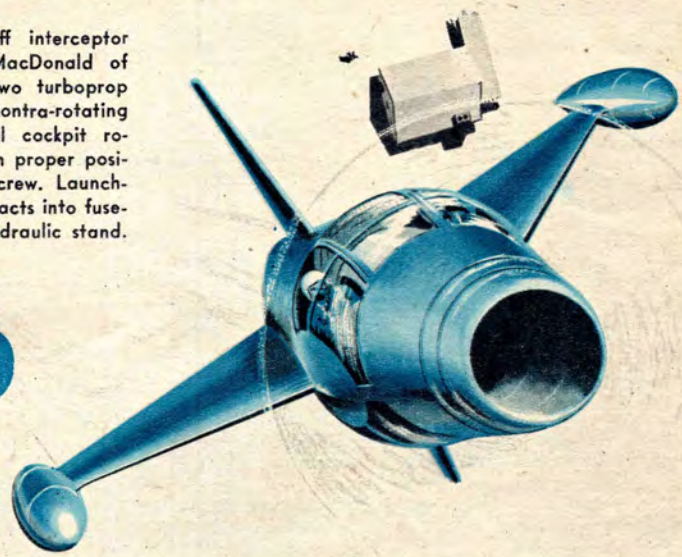
AIRCRAFT DESIGN

Vertical Take-Off interceptor by James R. MacDonald of Akron, Ohio. Two turboprop engines driving contra-rotating props. Spherical cockpit rotates to maintain proper position of two-man crew. Launching platform retracts into fuselage, as does hydraulic stand.



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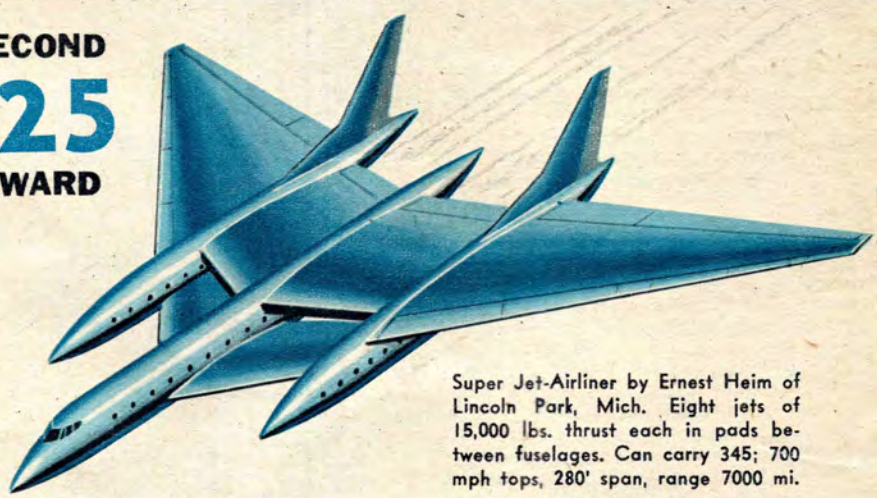

Super Jet-Airliner by Ernest Heim of Lincoln Park, Mich. Eight jets of 15,000 lbs. thrust each in pads between fuselages. Can carry 345; 700 mph tops, 280' span, range 7000 mi.

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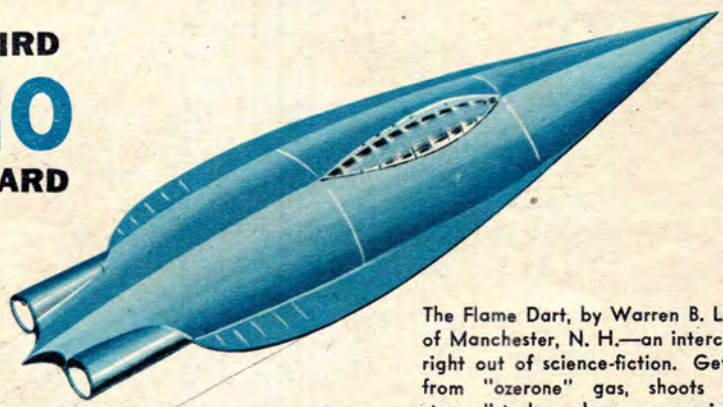

The Flame Dart, by Warren B. Layne, of Manchester, N. H.—an interceptor right out of science-fiction. Gets lift from "ozerone" gas, shoots "fire-stream" to burn down enemy aircraft. Speed 2200 mph, ceiling 80,000 ft.

Rules governing this competition are as follows: Three-view sketches of envisioned aircraft will be required. These should be not less than 8½ x 11 inches for the entire three views. Give sketches of complete airplane or space craft in three-quarter front and rear positions. Photos of a model of proposed design may be included. Information on powerplant(s), estimated performance, dimensions, and explanations of any unusual features are required. Data as to age, occupation or schooling of the entrant will be welcomed. The design may be of any type; space craft, commercial, military planes (fighters, bombers, troop transports), planes for private flyer and sporting or

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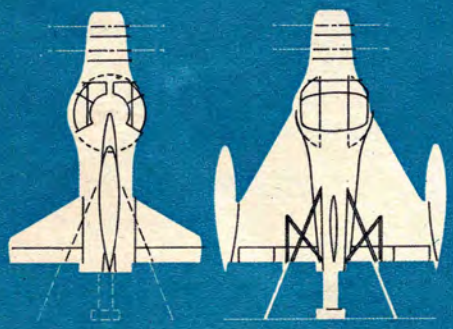

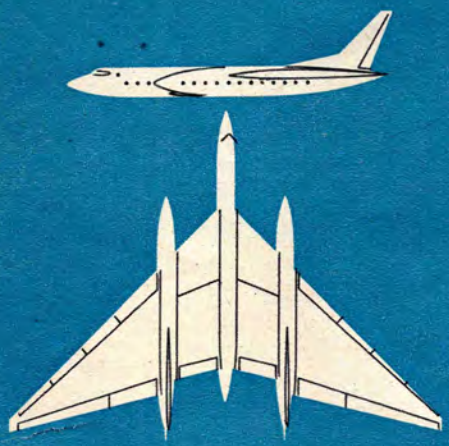

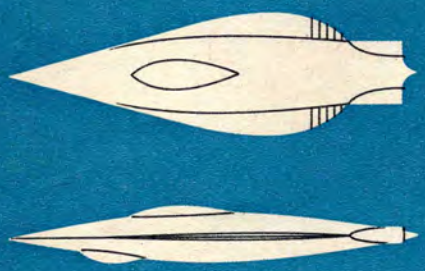

racing airplanes. Entry each month judged most practical or of greatest significance will receive $50; $25 for second place and $10 for third. Mail entries to Airmen of Vision, c/o Air Trails HOBBIES for Young Men, 304 E. 45th St., New York 17, N. Y. The editors regret they cannot enter into any correspondence on submissions.

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A Speed Demon in Action! Designed especially for the new gas outboard engines!

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You'll get the thrill of your life when you send the SEA DART racing through the water!

Designed along latest hydrodynamic principles to insure top performance and stability, this 16" all-plastic model includes such special features as—Completely finished hull (including bridle mount) of high-impact Styron plastic, designed to thrive on the most rugged use! Die-cut Styron engine mount and cockpit fairing parts! Authentic racing-type decals! Can be assembled in minutes . . . operated either tethered or free! Your dealer has the SEA DART—ask him for it today!

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Length 16"
Kit B-12 Beam 6½"

**Also for electric outboard motors*

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PLANES	Kit	Price
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Fokker D-VII	C-8	5.95
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Ring Master	S-1	2.95
F-51 Mustang	S-2	2.95
Yak-9	S-3	2.95
Space Master, Jr.	S-4	2.25
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POWER BOATS	Kit	Price
Richardson 27' Cruiser	B-1	$5.95
Higgins 17' Speedster	B-2	4.95
Chris-Craft 47' Buccaneer	B-3	7.95
Century Resorter '20'	B-4	3.25
Century Sea Maid '20'	B-5	2.95
Chris-Craft 32' Cruiser	B-6M	9.95
Deluxe 34-pc. scale marine fitting set for Kit B-6M	B-6F	3.50
Chris-Craft 50' Catalina	B-7M	11.95
Deluxe 66-pc. scale marine fitting set for Kit B-7M	B-7F	4.95
Century Sea Maid '20'	B-8M	7.95
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Higgins 26' Express Cruiser	B-9	3.95
Harco '40' Deluxe Cabin Cruiser	B-10M	10.95
Deluxe 64-pc. scale marine fitting set for Kit B-10M	B-10F	4.50
Chris-Craft 63' Motor Yacht	B-11M	18.95
Deluxe 108-pc. scale marine fitting set for Kit B-11M	B-11F	7.50

MARINE DRIVES	Price
½ A (⅛" dia.) Gas Marine Drive	$2.95
A (3/16" dia.) Gas Marine Drive	3.95
BC (¼" dia.) Gas Marine Drive	3.95
Electric Marine Drive	2.25

Marine Fittings Also Available *Individually.* Ask Your Dealer.

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(*Continued from page* 67)

new members—Clinton Merrill, Ed Miller and Donnie Farnsworth; there were 114 six-minute flights—almost enough to go around, for they had 126 entries.

The AVA-Toros of the Convair Recreation Assoc. held an air car contest, an air car to these guys being anything on wheels, driven by a prop and powered with an engine of .065 or smaller. The turnout was very promising, with old free flighters like Mark Taggett, youngsters of eight years and plenty of others so enthused that at the end of the contest the big question was: When are we going to have another one? The pylons were very simple, just a hunk of boiler plate with 5/16-18" hole tapped in it to take a bolt upon which a free-turning swivel was mounted; the deluxe jobs had ball bearings for ease of turning.

The line lengths were 13.4 feet with a 6-inch bridle attached to the car, giving a running circle which was 1/60 mile in circumference. The cars were timed for 10 laps or 1/6 mile and transposed to mph. Speeds varied greatly from 44 mph to less than 20 mph; this was expected in advance so—two sets of prizes were awarded with each contestant eligible for one prize only: High speeds were awarded for 1st, 2nd, and 3rd, while those who most closely duplicated their runs in speed were awarded prizes. An engine was given away for the fastest three runs by any one individual.

All in all the contest was very interesting, for it proved beyond a doubt that you don't have to be airborne to have good enthusiastic competition, that the contests can be held at night if a parking lot is available, and you don't need a lot of space or fancy permanently attached equipment.

A Circus of *Stunts* in the Air!

RING MASTER, JR.

Actual photograph of model built from kit.

Does Everything in the Book—Plus!

Kit S-5 Span 30" Length 21½" For engines from .09 to .19

$1.95

This is it! The Jr. model of the famous Sterling Ring Master . . . created by Matt Kania, world-renowned model designer. The RING MASTER, JR. will do every stunt in the book—and then some! Built of quality balsa wood with such special features as—Shaped and notched leading and trailing edges. Die-cut ribs and tail surfaces! Die-cut plywood parts! Die-cut fuselage! Decals! Formed wire landing gear! Hardwood motor mounts! EASY-TO-READ, STEP-BY-STEP PLANS AND INSTRUCTIONS! See your dealer now—start stunting with the RING MASTER, JR.—easy to build, and a snap to fly!

by *Sterling* models

1530-34 N. HANCOCK STREET PHILADELPHIA 22, PENNA.

Carl and Phil Strona's winning car was a four wheeler of ⅛ inch plywood, 3/32" music wire axles, simple vertical member of plywood to mount the Space Bug Jr. used as a tractor. No special gas tank was used, the prop that came with the engine provided the top speed which was more than 10 mph over the 2nd place car. No attempt was made to streamline the car; it didn't need it.

Try this one with your club. We had a lot of fun and intend to have more!

Southern Scene. Well-known and well-liked S/Sgt. Bryant A. Thompson writes from Japan that he'll miss the Southeasterns this year. He thanks "ATH" for using the picture of his B-17. The big B-17 model fell off a table and crashed a wing. Dave Dennis of Valdosta has the "remains" hanging up in his shop. When Thompson gets back he'll have it flying because it is a sturdy ship.

Bryant reports that he finds very little model activity in Japan. He mentions a team race held 28 miles south of his base, but they would not permit any U.S. engines to be used! The tall red-head is at Tsuiki Air Base on the southern Island of Japan. He says the Japs have a darn good engine in the "Enya .29." He brags about the power this will put out even . . . . "on Jap fuel which contains only gas, oil, and nitro benzene!" His address is Bryant A. Thompson, S/Sgt. AF, 19293115, 51st Maintenance Squadron, APO 917 % Postmaster, San Francisco, California, Box 481. All who know Bryant are urged to write him a letter. It means a lot over there to get a letter from over here!

Quest and Query. Seeks plans for 6ft. 4in. Howard DGA-8 4-place monoplane flying scale plans originally

(*Continued on page* 79)

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No. 108A ELECTRIC MOTOR (Miniature). Compact but powerful. Operates on 1½ to 4½ volts, reversible. Size 1¼ x 1⅝ x ⅞..$1.25

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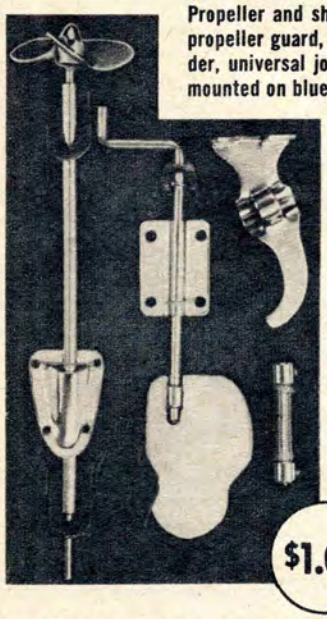

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AQUA-tivities

As the band plays "Over The Waves" this new dept. is launched. Come aboard, Matey!

■ More good news for modelers—this time for those who prefer boats . . . a column on the latest happenings in the field of model boats and yachting. We hope to fill it with notes on who's doing what, club activities, boats contests, meets and regattas, new commercial developments of particular importance to builders in this field. As we develop the column, we will be guided by the wishes of our boating readers.

We want pictures too, and will pay from $5 to $10 for those used. Payment of $10 to $25 will go for accepted sketches of boat hints, tricks and gadgets that we can use (just send a pencil sketch—we will make finished drawings).

Bob Keeton (3416 Stuart Ave., Richmond 21, Va.) sent us news on boat doings at Swan Lake in that city. Bob has a Sea Scooter from ATH, which he calls "Glo-Mo-Shun," that he finds is very stable, even in rather heavy winds. Reports lots of boats a-building in Richmond area, with most ambitious project a five-foot square-rigged sailing vessel with R/C.

Many casual model builders probably do not know that there are several national boat associations in this country, and that boat "Nationals" are held each year for various classes and types of models. For example, the Model Yacht Racing Association of America specializes in sailing craft of all sorts, and holds a yearly meet near Everett, Wash., each fall. The Association has Pacific, Mid-Western and Eastern Divisions, and each of these regional groups holds its own National races.

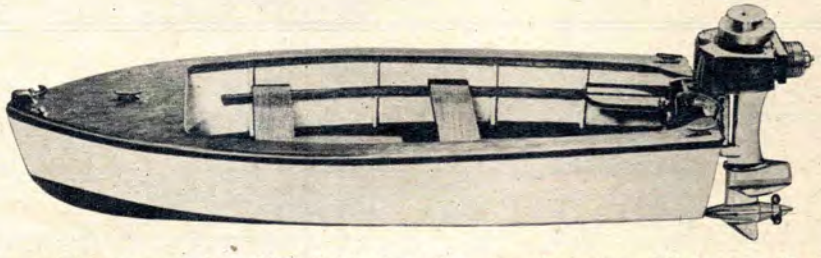
In last few years, the National meet has included a radio control boat event, and equipment has been of simplest sort. It is expected that this year, however, more variety and complexity will be seen. To encourage this sort of competition, Jim Walker put up an impressive trophy, which has stimulated interest in this event to a surprising degree. Readers can find out if there is a club in their vicinity by writing to Secretary of the MYRAA, C. O. Davis, 2113 18th St., Everett, Wash.

Another group is the International Model Power Boat Assoc., which specializes in powered craft. Many of these boys are strictly speed specialists, operating boats driven by both internal combustion and by flash steam engines. Don't sniff at steam; American boats driven by this type of power have topped 68 mph. Speed in largest I.C. engine (Class A, 30 c.c. displacement) is about 69 mph. Secretary of IMPBA is Bob Graham (126 Cottage Place, Jersey City, N. J.).

Bob is also vice president of the New York Model Knights, group of hot speed boat modelers. The Knights meet monthly and invite anyone in the area interested to join them; info on meeting dates and times may be had from Art Hasselbach (3087 3rd Ave., Bronx 51, N. Y.). This group has weekly boating sessions at Kissena Park, Flushing, N. Y.—spectators and boaters welcome.

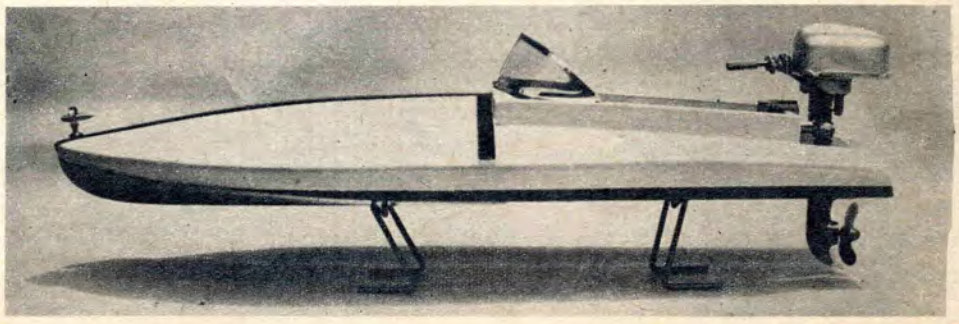
In the south of California, a very active club is Southern California Model Power Boat and Yacht Assoc., which goes in for all sorts of craft. Interested readers can get details from Commodore Al Wood (3455 W. 6th St., Los Angeles 5.).

The north California boys get their club activities through the San Francisco Model Yacht Club, which operates at Spreckels Lake. Here again, all kinds



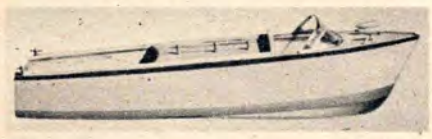
Presented here are new boat kits suitable for outboard engine power. This is Dyna-Model Products' prefab 1-in.-to-foot 16' Chris-Craft DeLuxe Runabout; has 12 metal castings.

Although an electric outboard motor is shown, International Models advises that their 18" Speed Star is well suited for the glow plug o.b. engines. Design is single step racing hull.



California Models' "Wee I" is 13 inches long, with beam of 5.5 inches. 9-piece solid const.

Cavacraft's kit #E-4 is carved balsa scale speed hydroplane modeled after big jobs.



Constructo's 15" speedster with shaped and sanded hardwood hull, pre-fab parts.

Sterling Models' B-12 Sea Dart is that firm's entry into the outboard engine racing field.

of boats are built and operated.

Seems a lot of the California model plane boys have gone in for boats in a big way. We hear of hot contests between owners of Half-A speedboats—certainly the cheapest possible way to get into model speedboat work—and have seen a film belonging to the Mustangs Club which shows their work with R/C boats. This film was run off at the Nationals in Willow Grove last summer, and greatly impressed R/C plane boys.

New Boating Items. A boat kit intended for the new F Class (for engines of .29 cu. in. disp.) will be announced soon by Consolidated Model Eng. Co. (3087 3rd Ave., New York 56, N. Y.). An adaptation of the "Geeno," the 26" racing boat kit will sell for about $10.

Adding to their line of marine items, Cameron Precision Eng. (Chino, Calif.) will now supply a .15 water-cooled engine. They also have Marine Drive Kits, universal couplers, single and dual jet .09 water-cooled engines, flywheels.

Flyball actuator, marketed by Polk's Model Craft Hobbies (314 5th Ave., N. Y. 1) is ideal for steering R/C boats; has lots of power to turn big rudders, and doesn't take too much in batteries.

Large catalog of boat model kits, most of them in the sailing category, is available from Model Shipways (39 W. Fort Lee Rd., Bogota, N. J.) for 25¢.

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SPACE BUGGY

● No tiresome construction. Ready to assemble and fly in an hour!

● Flies up to 10 minutes without refueling!

● Easy-guide Control Handle . . . self aligning controls . . . metal control mount!

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WARHAWK — Scale Controline, 17½" wingspan .039 to .074 engines $1.95

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KNOCKOUT — 18" span, Controline .045 to .099 engines $2.50

BABY ERA — 18" span, Controline .045 to .099 engines $2.50

ZENITH — 18¾" span, Controline .039 to .099 engines $2.50

SUPER ZENITH — 23⅛" span Stunt Controline .099 to .016 engines $3.50

AIR RACER — 18" span, Controline .065 to .199 engines $3.39

SHADOW — 32" span, Free Flight .030 to .099 engines $1.95

SLICK TRICK — 17¾" span, Controline .039 to .099 engines $1.95

TOWLINE TERROR — 24" span, Glider completely pre-fab $1.00

TOW-LINER — 24" span, Glider completely pre-fab $1.00

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See our other ad on page 55

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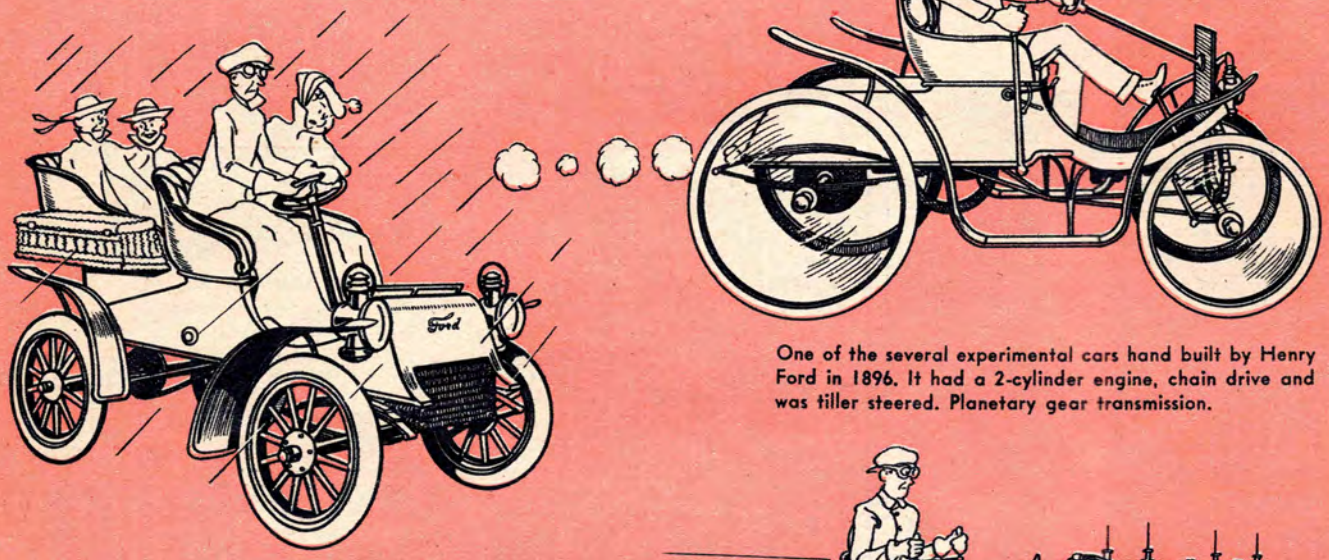
AUTO Progress

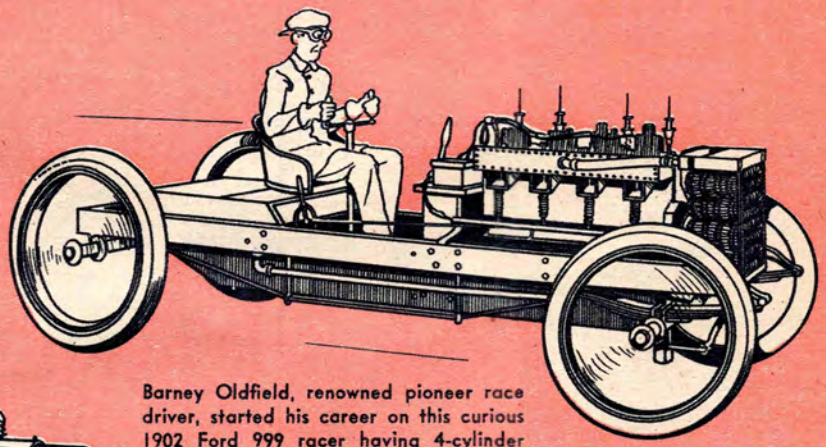
The FORD Story

By DOUGLAS ROLFE

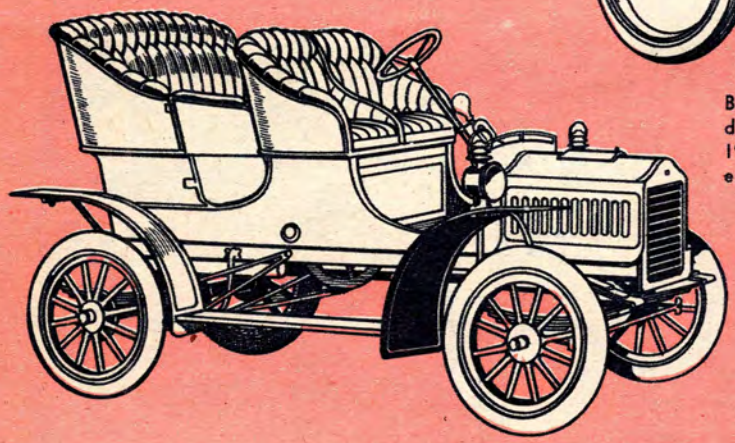


One of the several experimental cars hand built by Henry Ford in 1896. It had a 2-cylinder engine, chain drive and was tiller steered. Planetary gear transmission.

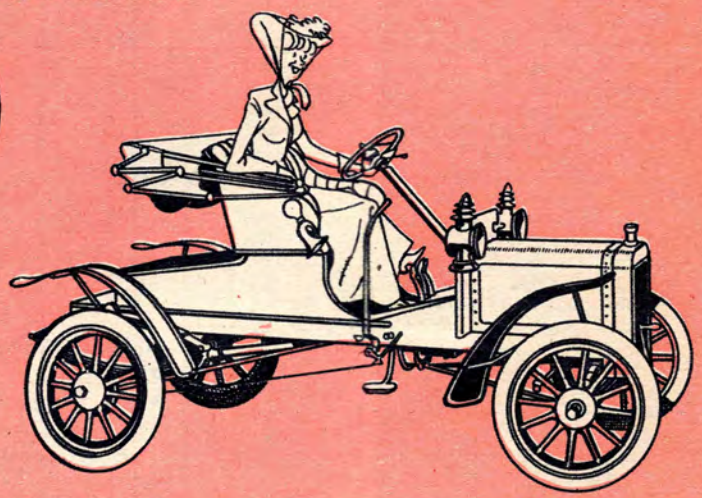
First production Ford, the 1903 Model A, had an 8 hp engine, two-speed planetary gears with chain transmission and removable tonneau body. Without tonneau it sold for around $800.



Barney Oldfield, renowned pioneer race driver, started his career on this curious 1902 Ford 999 racer having 4-cylinder engine, wire wheels.

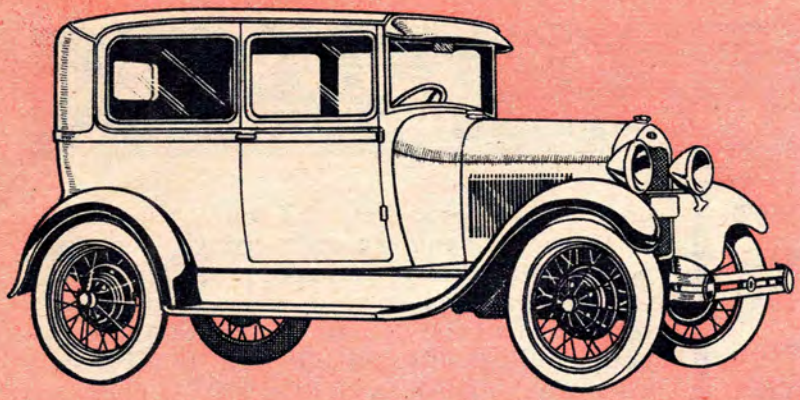


Side entrance doors first appeared on the Model B touring car which made its high-seated début in 1905.

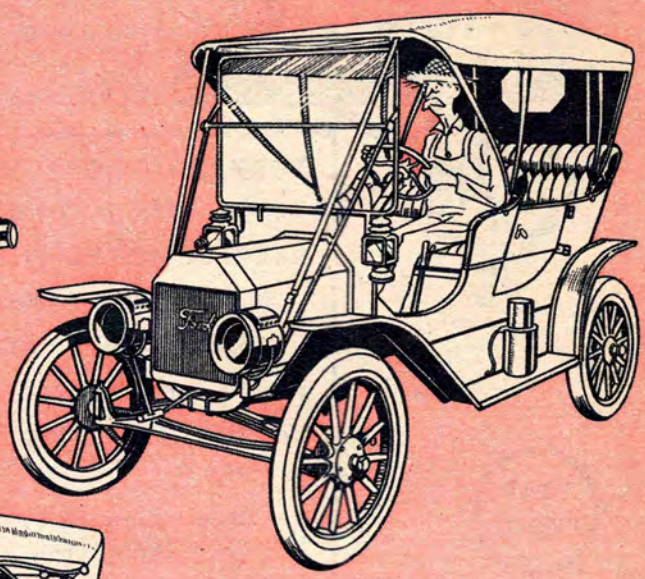


The Model N (right) of 1906 had a 4-cylinder engine, planetary gears and shaft drive. Many of its features were incorporated in famed Model T which followed it. The price was a modest $500.

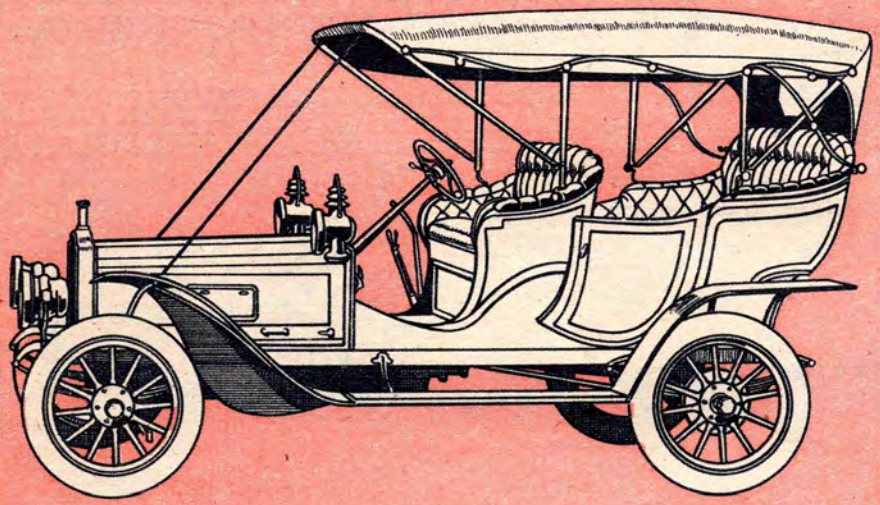
While it is hardly true that Henry Ford invented or built the world's first practical automobile, it can be safely said that he more than any other man brought the automobile within the reach of the masses. Financed and otherwise assisted by such potent names as Couzens and Dodge, he eventually dreamed up the fabulous Model T or "Tin Lizzie" which was produced by the millions. And produced for almost twenty



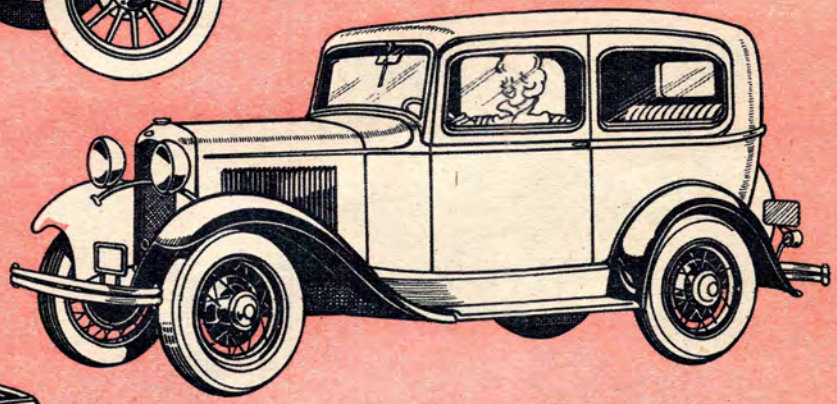
1928 Model A (not to be confused with 1903 Model A) was first completely new Ford design in 20 years. Also first Ford to employ conventional clutch and 3-speed transmission. Had a 4-cylinder 40 hp engine, safety glass, 4-wheel brakes.

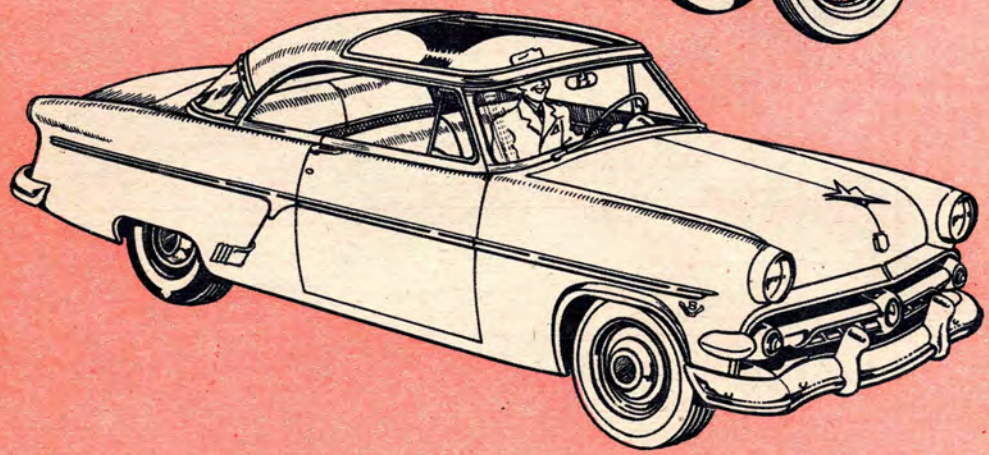


Model T, the legendary "Tin Lizzie," came out in 1908 and with only minor changes lasted two decades. The first Ford with left-hand steering, it had a 20 hp, 4-cylinder engine and built-in flywheel magneto. Prices varied over the years with a 1926 all-time low of $260 without extras. (Extras then included such items as windshield and top.)



1906 Model K was first Ford six and largest as well as most expensive ($2,500) Ford car produced in company's early period. It was also the least successful model and was soon withdrawn from the market.





First Ford V-8 had a high-performance 65 hp engine. With that engine but different body stylings, this car remained about same 1932-1942. Prices started at slightly under $600.

Most powerful and luxurious development of the V-8 series is this year's 130 hp Crestline Skyliner. With its smooth styling, automatic transmission, power brakes and steering, it is in almost unbelievable contrast to the first 1903 production Ford.

years without any real basic change. In fact, it was Ford's obstinate refusal to change this design that permitted his closest competitor, Chevrolet, to steal the lead in car sales. Temporarily regaining the No. 1 spot through the Model A in 1928 and again with the V-8 in 1932, the Ford Company today has a commanding position in the industry—only recently was it able once more to boast of sales leadership.

more thrust _ full h.p. _ less torque

PAYS OFF IN PRIZES AND SUPERIOR FLYING PERFORMANCE!

TORNADO PROPS WON BETTER THAN 2 TO 1 OVER NEAREST COMPETITION!

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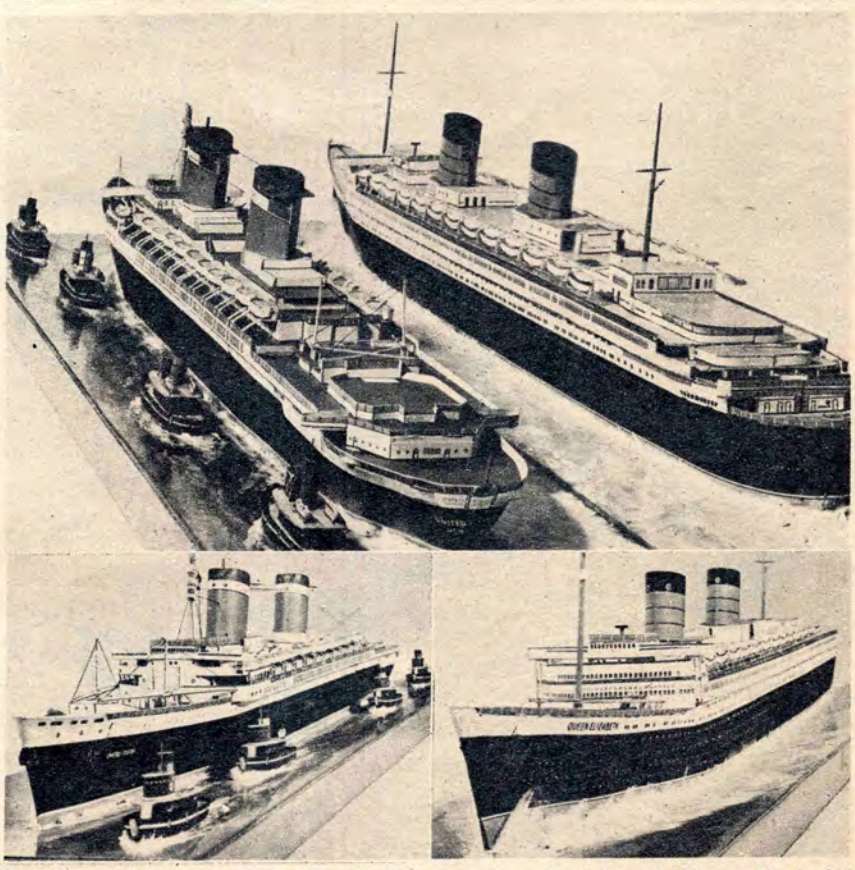
TRANSATLANTIC PAIR MODELED IN CARDBOARD

■ Realism-in-paper, a hobby with Wallace Rigby for many years, turned into profitable business. His cardboard model die-cut "pushouts" are sold on both sides of Atlantic. They come in giant-size book form and represent everything under the sun from airplanes, boats, sports-cars and rockets to interplanetary vehicles. Born in England, Rigby is one of that country's model and glider pioneers; flew with the RAF during World War I. His latest project is a detailed model (in cardboard, of course!) of atomic sub.



These two majestic ocean liners, the "United States," on the left, and "Queen Elizabeth," right, as well as the tiny tugs are made of cardboard! Rigby's apartment (top left) is full of his latest creations; the one Mr. R is holding seems to be a puzzler. It's a whip control model of the legendary Russian "Jar Ptitza" (Firebird).

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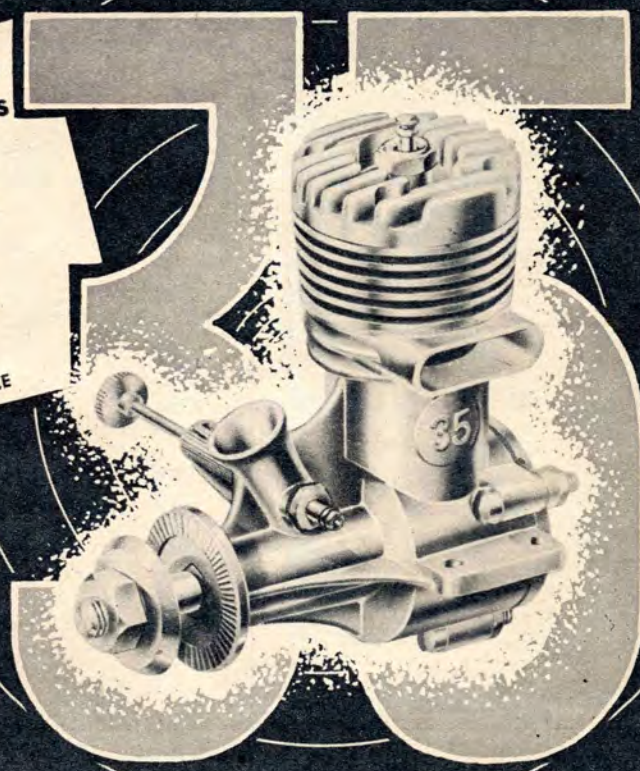
The Greatest Forward Step in the Engineering of Miniature Engines

The New '1954 Veco' .35

The ONLY engine that has

TCC*

*TEMPERATURE CONTROLLED CLEARANCE



★ YOU ASKED FOR IT ★

The Great Increase in the demand for the 1954 Veco .29 and .31 has prompted the pre-release of Veco .35 also with 'TCC'. It has been TRIED . . . TESTED . . . PROVEN under the personal direction of Mel Andeson . . . well known through the years for the "Cyclones" and many "Spitfire" engines.

HENRY ENGINEERING COMPANY

BURBANK • CALIF. • U.S.A.

NOTE: See Bob Palmer Fly the New 'Veco' THUNDERFIRD, Powered with the New 'Veco' .35 Engine, at the 1954 Nationals.

(*Continued from page* 73)

presented in Popular Aviation in August '37 issue. Assembly kits were offered by Aviation Products Co. and Megow Corp. When can he get 'em, asks Harry Marsh, 1524 Sharon Place, San Mateo, Calif.

Wants plans of Junkers Ju-87 Stuka printed by Cleveland Model & Supply Co. (now Cleveland Model Products) also plans for Cadet models put out by Winner Eng. Co., of Trenton, N. J. James D. Walters, 2001 Luna Ave., San Leandro, Calif. Jim also is seeking cockpit details and performance data on the Stuka, plus info on Maircraft kits.

Writes William Guy Harrell, Ward 19-A, Veterans Hospital, Perry Point, Md.: "Anybody having an old R/C model that they don't want please contact me. I have no transmitter, receiver, etc., but I can wait 2 years until out of here."

Galien, Mich., modeler wants to contact free flight model club in Berrien County, Mich., or St. Joseph County, Ind. B. G. Harker, Jr., Box 134. Phone 737.

Oregon Aeromodelers Assoc., c/o Earl L. Cayton, 879 N. Liberty, Salem, Ore., says O. A. A. wants to exchange its monthly "Digest" bulletin with other modeling organizations.

Has 1942 Modelcraft Spook 72 kit, but no plans. Anybody got? William B. Richards, 2850 Quentin Ave., Minneapolis 16, Minn.

Will pay for Cleveland ¾ in. or ½ in. scale kits of Douglas 0-38 observation, Curtiss F-11C-2 Goshawk, Turner's "57" Wedell Williams Racer, and Turner's Pesco Special '38 Laird Racer. George S. Talas, 9622 Wamelink Ave., Cleveland 4, Ohio.

Under Control

(*Continued from page* 22)

at the fences with their ships; little damage to either, planes or fences. Thompson is flying an original with K&B .19—plane weighs 6 lbs., has elevator control. Perfect weather at Tulsa; Adolph Hugo and Charley Jones had new ships; there was an original design bipe that the boys dubbed "Double Take." It was a nice flyer, but required a big league pitcher to launch it!

Technical Notes. Due to an unfortunate series of circumstances (Ed. note—Tell them the truth, Howard, we lost the manuscript!), the story accompanying Walt Good's receiver article in the May issue had to be omitted. However, we were able to get the whole works on Plan 554A (available from Hobby Helpers, 770 Hunts Pt. Ave., N. Y. 59) including full-size chassis drawings. Also on this plan are reprints of the Mac II and Mini-Mac—making it an R/C collector's item. The Wag tone transmitter, which has been in extensive use since early last fall, can be improved a bit by making the changes below (which do not appear on the plans in the June issue). The changes take care of the matter of overloading, which has been evident when the receiver is very near the transmitter; the overloading, or "swamping" was caused by oscillator signal leaking out of the case, and partially masking the modulation of the output tube.

Changes are as follows: 1. Connect key between the two 10K resistors feeding plates of the 3A5 multivibrator tube. Move 135 V connection to junction of key and 10K resistor leading to plate 6 of this tube. 2. Change condenser between screen grid of oscillator tube (terminal 3) and ground to .001 mf. Connect .05 mf. condenser *across* 110K resistor attached to this same terminal. Connect lower end of this resistor to terminal 6 on 3A5 tube. The LO-power switch may be connected to put 45 V. on the amplifier (keep 135 V. on the oscillator and the 3A5) or may switch off the amplifier entirely, providing a very weak signal for tuneup at close range.

John Hamblen calls attention to a couple of "boo-boos" in the circuit in

(*Continued on page* 81)

2 TUBE MINI-MAC WITH *Superformance!*

USING THE IAG4 TUBE FOR GAS TUBE ACTION WITH HARD TUBE ECONOMY. . . . . .

OPERATION	1ST TUBE	2ND TUBE
IDLING	.8 MA.	.0 MA.
SIGNAL ON	.3 MA.	3. MA.

COMPLETE KIT

TWO IAG4 TUBES, NEOMATIC RELAY, 25K POT, RESISTORS, CONDENSERS, QUENCH COIL, FLEA CLIPS, DRILLED BOARD, INSTRUCTIONS, SLUG FORM, WOUND RFC, ETC. 14.95!

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MINI-50 PLASTIC BOX (NOT IN PKG.) .25

NEOMATIC RELAY- 5K, 7K- 5.95

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24" long — 11" beam, radio-controlled boat for air-prop or new gasoline outboard motor. All mahogany exterior, completely prefabricated, compound planking eliminated. Outperforms all scale hulls. **$7.95**

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FLIP-FLAP—Revolutionary full stunt job. 24" span. **$3.50**

WING-DINGUS — Experts' choice for stunt, sport. 16" span. **$2.25**

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"TIPSY" — Exact scale stunt flyer. 30" span. **$5.95**

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MASTER MODELCRAFT

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Back again is our old "Race Car News" column—and here's general info on what the sport's all about

■ Ever see the results of a model race car meet, and been utterly confused at the various classes and categories of cars?

Most miniature racing is under the rules of the American Miniature Racing Car Association. AMRCA, run by the model race enthusiasts themselves. This Association, which issues sanctions for meets and certifies and lists records, has been in existence some 16 years; there are dozens of affiliated clubs. AMRCA modifies or changes rules, and makes new ones, as racing progresses.

There are two main types of racing—rail and cable. With the latter, the powered car travels around a circular track, restrained by a cable anchored to a center post. There are three standard sizes of tracks, those for 35′ cable (1/24th mile per lap), and 42′ cable (1/20th mile) and those for 52′6″ cable (1/16th mile).

Rail racing is considered more interesting in many ways, especially by spectators, since four cars may be run at once. Rail tracks are usually oval, with steeply banked sides and turns; cars are guided around the track by low metal rails. There is one rail for each car which is held by guide rollers. Just as in big car races, the cars race in heats, and starting positions are staggered, so that the outside car—with the longest distance to travel—will not be handicapped.

Unfortunately, rail tracks cost a great deal of money to build and maintain; consequently there are not too many of them. Cable tracks are more numerous.

The powerful little cars themselves are classed by type and by engine capacity. The elite group is the *Custom Class;* there are no restrictions as to special engines, precision machine work, super fuels, etc. Many cars here are made by expert machinists, either amateur or professional. All sorts of hopped-up engines are seen here. Needless to say, top speeds are made by this group; the record is over 150 mph!

Then comes the *Sportsman Class,* which is further divided into *Custom* and *Manufactured* groups; rules limit the amount of special work that may be done on a car or engine. Standard castor oil-alcohol fuels are used, further reducing upkeep, since the super fuels allowed in the Custom Class are hard on engines.

There are other classes and groups, among them being found the *Spur Gear* cars, *"B"* and *"BB" Classes, Streamliners,* etc. Some clubs have informal races for such cars as *Hot Rods,* and even *Clunkers*—the latter class is self-explanatory!

Main engine groupings are up to .360 cu. in. disp., and .361-.610, with very little activity in the former. Weight, wheelbase and tire size are specified for each engine group, but the specs allow variation; the builder can work in his own ideas. In general, cars must look like a real racer; cockpits must be a certain size and the engines must be installed so that they cannot be seen when the cars are viewed from the side.

Scores of races are held during the year; especially active groups with tracks are in New Orleans, Bethlehem, Pa., Ontario, Calif., Chicago, Denver, Anderson, Ind., and Oklahoma City. National Championships last year were at Atlanta, Ga. You can secure the address of your nearest track from the AMRCA, Secretary Paul Kruse, 1629 Sinclair Ave., Ft. Wayne, Ind.

Photo shows the cable track of the Atlanta Miniature Race Car Club, located in Maddox Park. Safety is a prime consideration; there is a low fence just outside the running surface, another much higher gives protection to spectators. Work tables are set up outside the fenced-in track, additional fencing prevents entrants working on cars from being overwhelmed by the public. Most every club claims that *its* track is fastest in country—the Atlanta group is no exception. Supporting their claim, however, are records established during the 1953 Nationals. Since the picture was made, buildings were added.

Some notes, now, on another type of "miniature" car racing: the Soap Box Derby, in which the cars piloted by their schoolboy builders race down smooth-paved streets. Originated in 1933 by a newspaper photographer in Akron, Ohio, the races have been sponsored on a National basis since 1935 by the Chevrolet Division of General Motors. Winners of local races all over the country, and in foreign countries are awarded expense-free trips to the finals at Akron. It is estimated that 50,000 boys between the ages of 11 and 15 will compete this year; races will be held in 150 U. S. communities to determine who goes to Akron for the finals. The winner receives a $5,000 college scholarship; $10,000 more in scholarships are awarded to other top racers.

Chevrolet Derby finals will be at Akron on August 15, 1954. Check with your local Chevrolet dealer as to preliminary races in your area.

(*Continued from page* 79)

April ATH, p. 82; says he forgot to show a .05 mf. paper condenser from upper end of R1 to ground. And we omitted ground connection to lower ends of actuator and motor control units; also, these two units should be reversed—actuator connects to right hand relay contact.

It has been found that when using deBolt Multi-Servos, you need only about 50% of the rudder area and movement that is normally used with escapement control. Otherwise, overcontrol may result.

George Foltz, 127 W. Hiram St., Barberton, Ohio, had a bit of trouble with the plate current of his Mac II transmitter shifting around as he moved the key lead in relation to the ground and antenna. Lew Errington suggested putting chokes in the lead, just where they leave the transmitter case. George wound #30 en. wire on a ¼" dia. form, for a length of 1", for each wire in the key lead. (It will do no good to put a choke in only one lead.) This cured the wobbling plate current completely. Another way to lick this is to increase the size of the ground plate under the transmitter; this has the effect of "tying" the set closer to the ground. A piece of hardware cloth or even chicken wire about a yard square, placed under the set, will "cool off" the key leads perfectly. Any material of a metallic nature would do the job, including kitchen type aluminum foil, copper or bronze mosquito netting (the iron type is often sprayed with lacquer, which insulates some of the strands from each other), or even solid sheet metal.

A simple way to mount the Citizen-Ship Type AR 465 mc. receiver has been used by Harold deBolt, who asks that we pass it on. Since this receiver has virtually nothing projecting below the bakelite base, you just fasten it to ½" thick sponge rubber with "G & E Plio-Bond" cement, then attach the assembly to plywood with the same material. Works fine —no rubber bands to fool with.

Another trick on the same receiver, and also the Model CR made by same concern comes from James Conklin (Leitchfield, Ky.). He uses 5 medium flashlight cells in a series for heater A supply, with a series resistor of 8.6 ohms (a ½ W. carbon job with a SPST switch connected across it—switch open at this point). When the voltage under load has dropped to 5, the switch is closed, which raises voltage to about 6, for a new lease of life. Same deal would also work, fine with five large flash cells in series, if your plane can carry the weight. We have mentioned use of 5 pen cells in series here before, but they can be used without series resistor, since they will not hold up to as high a voltage under the tube load, as will the mediums used by Jim. He feels the resistor and switch are much safer than operating five medium cells on the set without them.

Paul Runge (Box 301, Higginsville, Mo.), a real Simple-Single and Mini-Mac booster, has a couple more hints on the former. He tried a 1V5 with plate hooked to screen grid in the S-S, found it worked fine. 60 V. worked nicely, gave 1.8 ma. on idle, down to .8 ma, with signal. This might require a bit less capacity in the padder than used in the original S-S; you can reduce capacity by taking off a couple of plates.

Irv Megeff suggests that we caution readers to connect the ends of the quench coils *exactly* as shown in the article for both above-mentioned sets. Also, he suggests that the clipped-off plates of the trimmer on the M-M be

(*Continued on page* 83)

To model modern aircraft

you must have Modern Power!

JETEX JET ENGINES

$1.95* $2.95† $4.95* $8.95†

These outstanding model jet engines bring you these time-proven advantages.

- TORQUE FREE THRUST OF TRUE REACTION MOTOR
- LIGHT WEIGHT, PRECISION MADE ALUMINUM PARTS
- LOW COST, SIMPLE, EFFICIENT DESIGN
- NO MOVING PARTS
- SAFE, CLEAN, SCIENTIFIC MODEL FUEL

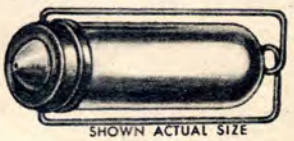
JETEX JET ENGINES					
SPECIFICATIONS	#35	#50	#50B	#150	#600
ENGINE WEIGHT	.15oz.	.2oz.	.2oz.	.73oz.	1.6oz.
FUEL WEIGHT	.10oz.	.2oz.	.2oz.	.27oz.	.4oz.
TOTAL WEIGHT	.25oz.	.4oz.	.4oz.	1.00oz.	2.0oz.
THRUST (average)	.5oz.	.6oz.	.6oz.	1.75oz.	5.5oz.
THRUST with Aug. Tube	------	-----	.75oz.	2.25oz.	7.0oz.
THRUST duration	8 sec.	12 sec.	12 sec.	14 sec.	10 sec.
JET EXHAUST VELOCITY	1200 ft/s	1200 ft/s	1300 ft/s	1400 ft/s	1600 ft/s
OVERALL LENGTH	1½"	1⅝"	1⅜"	3½"	2¼"
MAXIMUM DIAMETER	9/16"	11/16"	11/16"	1"	1¼"
MODEL SIZE LIMIT (span)	12"	16"	20"	36"	48"
MODEL WEIGHT LIMIT	1oz.	1.5oz.	1.7oz.	5.0oz.	16.0oz.

* Includes fuel, wick, spare parts, instructions.
† Includes above items and augmenter tube.

NEW! THE JETEX "ATOM" No. 35

Get set for real flying thrills with this brand new addition to the Jetex line. Specifically designed for use with small, lightweight models, with wing area under 25 square inches.

Uses a *shaped fuel pellet* to provide constant thrust throughout the power run . . . extremely important in light weight models. Only $1.75*.
Fuel—8 pellets and wick 50c



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FLY-N-SAUCER-

THIS IS A FREE FLIGHT MODEL

EVERYBODY HAS BEEN TALKING ABOUT THEM

NOW YOU CAN MAKE ONE

Easily Rises to a Height of 1,000 FEET
Takes Off and Lands On It's Own Power

FLIGHT TESTED

Full Scale Plans only	.50
Construction Kit with plans	1.25
Accessories that can be bought seperatly	
Engine .049 Space Bug Jr.	3.95
Propeller	.25
Fuel (glow plug) ½ pt.	.60
Leads and Clips for battery	.50
COMPLETE KIT with all accessories listed	$ 6.50

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SKYMASTER RADIO

1000 Miles received at night, yet it fits the palm of your hand

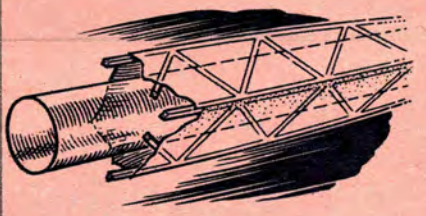
This electronic tube miniature kit covers standard broadcast band 540 to 1600 KC. Hearing aid battery powered. Outperforms so-called "tubeless" sets or your money back. NOT A WEAK CRYSTAL SET. A powerful *personal* radio for home, office, or camp, gives you broadcast programs without disturbing others. THE PERFECT KIT FOR BEGINNERS in electronics. Easily assembled. ALL PARTS GUARANTEED. Batteries plus EXTRA "A" BATTERY, $1.50. 1500-ohm ALNICO MAGNET powered earphone $1.45, or flesh-color 1900-ohm HEARING AID EARSET available at $4.95. C.O.D. orders accepted with $1 deposit wthin U. S. and possessions.

$6.75 postpaid

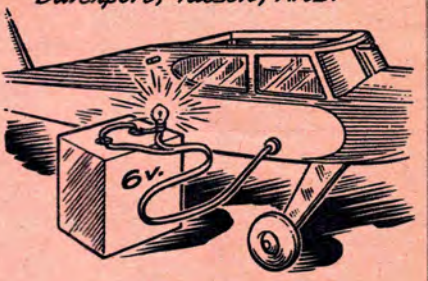
Factory-Assembled **$8.95** (set only)

Precision Radio Electronics
Placerville, Calif.

English modeler P. Gasson suggests celluloid "anti-vibration" tube for new-rule Wakefield fuselages. Prevents motor slashing covering & damage from rubber lubricant —

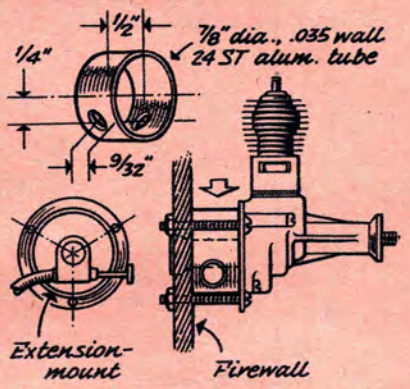


One-man R/C distance check made by plugging in 6v. battery & bulb in series through relay contacts... check at night; bulb visible up to 3/4 mile distance on signal reports Howard Davenport, Tucson, Ariz.



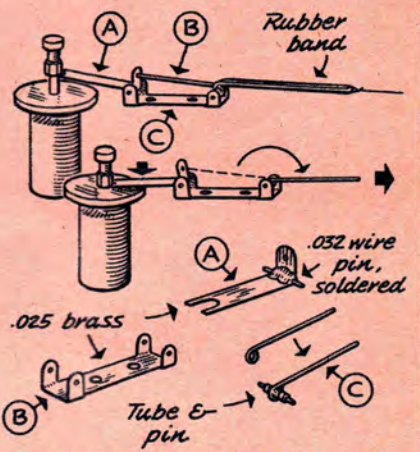
MODELPLANE Sketch-book

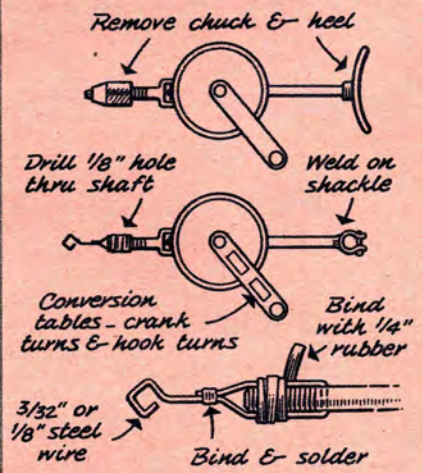
Have you developed something new in construction, control or flying? Send a rough sketch—we'll redraw it and pay $5 for each accepted. Contributions should be original ideas; sorry, we cannot enter into any correspondence on submissions.



Aluminum extension-mount for "Thermal Hopper" engines places needle-valve ahead of firewall. Self-aligned by mounting bolts says Tom Henebry, Chula Vista, Calif.

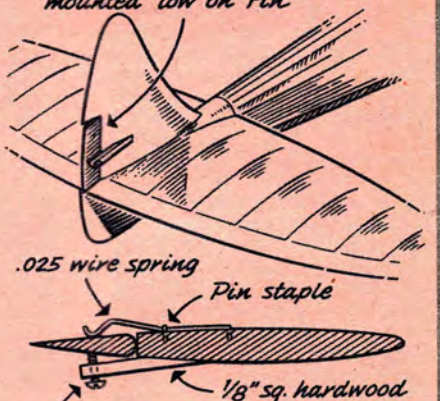
Dependable dethermalizer "gadget" is actuated by any plunger-type pneumatic timer. Works best under load says John Tatone, San Francisco, Calif.




Remove chuck & heel
Drill 1/8" hole thru shaft
Weld on shackle
Conversion tables - crank turns & hook turns
Bind with 1/4" rubber
3/32" or 1/8" steel wire
Bind & solder

Safe, heavy-duty winder made from heavy hand drill has shackle for attaching to safety belt — Submitted by Dick Salzer, Patchogue, N.Y.

"Micro-Tab" should be mounted low on fin



G. R. Nolin, Fairborn, Ohio, suggests special tab for fast, high powered freeflights —

All Plastic
Molded in Finest Acetate

Parts fully shaped — press-fit and snap-fit together for jiffy assembly.

✱

Realistic driver included.

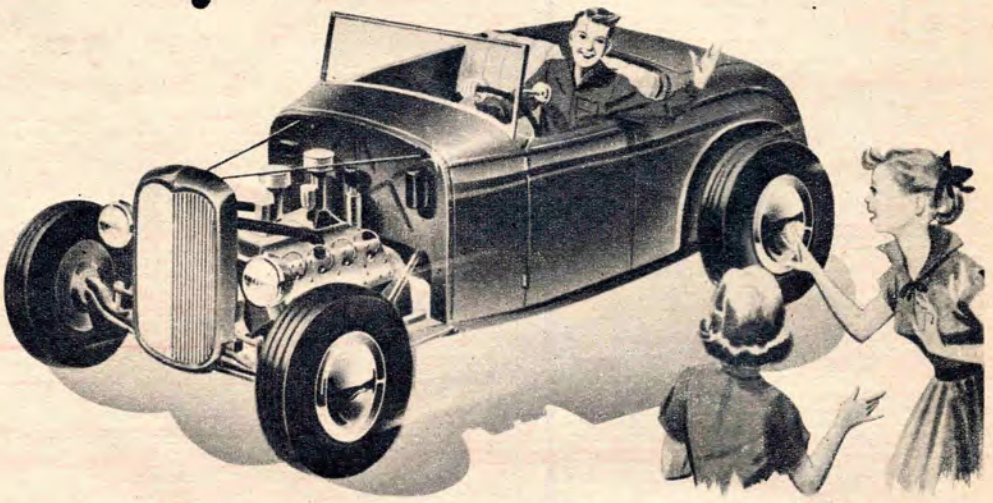
✱

Amazing molded-in detail includes gear shift, racing head engine—instrument panel—head lamps—upholstery — twin carburetors — radiator hoses — etc.

Complete Kit
98c

Fellows! Here's Another Thrilling Plastikit! Have Fun! Build this NEW

Monogram HOT ROD



Authentic Scale Model • Amazing Super Detail

Here is a new kit that will give you your biggest model thrill. It's the popular 1932 V-8 Ford street roadster. A real class C Hot Rod with channelled body, dropped and filled front axle and Mercury engine. Molded with all of its realistic detail in fine acetate plastic. All parts fully shaped, fit together like magic. Get a Monogram Hot Rod Plastikit today. You'll have loads of fun.

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If no dealer near you, order from address below. Send 25c additional to cover packing, postage.

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ALL PLASTIC *Midget Racer*

Another fine all-plastic model. Racing driver, Offenhauser engine and removable hood. Other terrific detail. Fun to assemble.

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Best for all Monogram Models

Be sure to ask for fast-drying Mono-Dope in 19 brilliant colors and finishes and Mono-Glue, the cement that holds so tight. They're best for Monogram's plastic, wood and other parts. No special paints required. Only 15c.

(*Continued from page* 81)

soldered together; some cases have been encountered where one or more plates did not make good contact, with the result that full capacity could not be reached, and the plate current could not be made to drop properly.

Followers of this Column who are interested in the latest thing will be interested in the transistor receiver for R/C use described by Joe Hughes in the March 1954 issue of Radio & Television News. Although intended for the ham 160 meter band (which was as high as Joe could go with the transistors he had at the time) the article offers some good ideas for those who want to experiment with transistors in this connection.

Technical Items. Many R/C builders have complained that they can't procure locally the many little parts needed for making up apparatus—hate to wait several days for them to come by mail. Few hobby shops stock such items as resistors, condensers, plugs and jacks, disc magnets, etc., etc. But now they can do so with a minimum of grief; these parts and many more are being packaged and sold in the same manner as the well-known "Perfect" and "Kap-Pak" model components, complete with a display board, by Ace Radio Control (Box 301, Higginsville, Mo.). Boards are not sold to consumers, of course; but if your local dealer does not have them, tell him to write to Ace. Prices to consumer said to be about same as he would pay at large mail order radio stores; Ace finds both dealers and R/C builders happy with the deal.

Tiny but versatile proportional pulser may be had from Polk's Model Craft Hobbies (314 5th Ave., N. Y. 1), measures 3¾ x 2⅞ x 1⅝" thick, is electric-motor type. Has built-in rheostat to set motor speed, on-off switch, button to give pulse-speed change. Made by Fenners-Pike for use with their prop. actuator, will work with any prop. control system. Batteries for motor—3 V. needed—external, of course. Polk's carry Webra line of diesels, including a .15 two-speed model, selling for about $15. They also distribute the new Sommerhof book, "Radio Control of Model Aircraft"—price, $2.75.

Husky proportional pulser is made by Curtis Machine Products (2100 Richmond Ter., Staten Island 2, N. Y.). Case is large enough to hold two flashlight cells, has control lever, on-off switch for the motor, and push button for pulsing, on front cover. Very well made, pulser sells for $19.95.

A special control box made for use with the "Pulsequence" system, is sold by Rite-Control (Box 37, Williamsburg Sta., Brooklyn 11, N. Y.). The system allows simultaneous rudder and elevator operation, with only a single standard 2 arm self-neutralizing escapement in the model. 3 x 4 x 5" control box is motor-driven type, has large control handle on top, and carries batteries for motor inside. Called "Rite-Controller," it comes with complete instructions for use, can be converted into regular proportional pulser, by substitution of another contact plate (supplied). This concern also carries extensive line of R/C components, tubes, standard brands of escapements, etc. Send for catalog.

Kit for R/C transmitter called the "Director" is sold by Gyro Electronics (325 Canal Ct., N. Y. 13) for $12.95. Includes single 3D6 tube, crystal, metal case, key, antenna; room in case for necessary batteries, or Gyro 2 V. power

(*Continued on page* 87)

See Page 14 for GYRO R/C Transmitter Specials!

GYRO

The Most Progressive & Reliable RADIO CONTROL SUPPLIER

NEW! Supersensitive Tube G4, terrific for MINI-MAC and perfect hard tube for 2nd Stage Lorenz Receiver..... $ 1.95
MINI-50 RECEIVER KIT, Complete with 1AG4 Tube, wound choke Solid Quench Coil and Neomatic Relay..... 11.45
NEW!—3rd Hand for Sale! Automatically Keys your transmitter ON and OFF while you check your receiver at any distance. Complete Kit..... 5.35
Wired and ready to operate..... 7.95
NEW BOOK, "Basics of Radio Control"..... .35
NEW! Complete **LORENZ RECEIVER KIT** with RK-61, Hard Tube 2nd Stage, 10,000 ohm Relay & diagrams. Nothing else to buy..... 9.65
NEW! **RELAY SPARK SUPPRESSOR KIT,** improves receiver operation..... .35
NEW! Powerful **TRANSMITTER KIT, The Gyro Director.** Famous circuit, almost 5 Watts. Nothing else to buy. With diagrams & instructions. Brand new cabinet, antenna, keying switch, tube, crystal & all parts.....only 12.95
New! **FIELD STRENGTH METER KIT,** checks your transmitter signal. Use any meter up to 5 Ma. All parts & diagram, less meter..... 1.35
New! **ACCURATE 2" DUAL RANGE MILLIAMMETER.** 0-5 & 0-50 Ma. with switch..... 3.85
R/C COMBINATION TESTER: 5 Ranges: 5 Ma, 50 Ma, 5 V, 50 V, 250 V. **NOT A KIT**..... 8.95
Brand New 2 V. VIBRATOR TRANSFORMER, used in PE157. Output 180-135V. @ 35 Ma. 3.50
NEW! STOP WASTING MONEY on dry batteries for your transmitter. Add our **2-VOLT VIBRATOR SUPPLY** to any transmitter; output 135 to 180 V. Kit: **$6.95**.....assembled 10.95
NEW—2 Volt Battery Charger Complete Kit **$4.95**; Wired & Tested..... 6.95
NEW BEEP BOX. Fits in palm of hand! Rotary type works with any transmitter & self-neutralizing escapement. **NOT A KIT**..... 1.95
PORTABLE BLACK CRACKLE STEEL CABINETS 12" x 7" x 6" **$2.85**: 9" x 5" x 6"..... 1.95

Low Cost PROPORTIONAL CONTROL *added to any Transmitter & Receiver. Works with any Actuator.*
COMPLETE KIT of parts & diagrams for TRANSMITTER PULSER, incl. battery & case..... 6.95
ACTUATOR KIT for Receiver—no rubber bands or escapement needed..... only 1.95

ADAMS ACTUATOR . . . not a kit..... 6.45
PE 157 SUPPLY for Mac II Transmitter..... 11.95
LORD SHOCKMOUNT..... .15
SIGMA 4F RELAYS, 8000 ohms **$4.95**; 3 for 2,000, 3,000 or 10,000 ohms..... 13.95 5.95
SIGMA 41FS, Sensitive 10,000 ohms—SPDT..... 1.45
OSR type Quench coils $1.65; for **MINI-MAC**..... 1.25
WHIP ANTENNA, 3 sections, 9½ ft..... 2.25
Antenna with base mount..... 2.75
FLEA CLIPS.....4 for 10c, DISC MAGNET for proportional control, 1 1/16" diam..... .95
DIAGRAMS: Transmitter or Receiver..... .25
MODEL X, MAC II, 2-tube Transmitter Unit, as used in Gyro transmitters. Only 3"x4" x 1½", wired and tested. Complete, install in your case with tubes & crystal..... 15.50
Above unit in kit form, with tubes and crystal 10.95

RADIO CONTROL RECEIVER KITS 27¼ Mc

NOTE: All GYRO kits are guaranteed complete deluxe types with diagrams—nothing else to buy!
LORENZ 2 TUBE with 2 potentiometers, original design..... 3.35
Complete with 2 Gas Tubes & SIGMA 4F Relay 14.15
MINI-MAC with Special **QUENCH COIL & Wound Coils**..... 4.25
Complete with **CK526** Tube and **ED RELAY**.... 11.45
MILLER or **SIMPLE SINGLE** with **OSR** type **QUENCH COIL**..... 4.45
Complete with **Tube & SIGMA 4F Relay; MILLER, $9.95; SIMPLE SINGLE**..... 9.80
JOHNSON 3 Tube, with **SUB-OUNCER CHOKE**.... 4.75
Complete with 3 Tubes & **SIGMA 4F 3000 Relay** 13.85
ABOVE KITS with drilled base & wound coils, add .50
ABOVE KITS wired & tested, ready to operate, add 5.00
TRANSMITTER & RECEIVER KIT..... 9.95
Parts and diagrams (less tubes & crystal) to build famous **MAC II Transmitter Unit** and **LORENZ RECEIVER,** with 10,000 ohm relay

PARTS FOR THE MINI-MAC Small quench coil 1.25
.05 Condenser ... .25 Padder Condenser .80
TUBES: CK526AX 1.95 CK506 ..... 1.45
RELAY-E.D.... 5,000 ohm..... 6.50

ESCAPEMENTS
CITIZENSHIP 5.95
BONNER MINI..... 6.95
SUPER AEROTROL.....3.95 ED MARK III..... 5.50
BONNER COMPOUND, makes 1 channel duplicate 3 channel control..... 14.95
CRYSTALS, 27.255 Mc Peterson Z9A..... 4.75
Crystal holder ..... .15

SAVE 5%—Deduct 5% from any of the kit prices when ordering with any escapement.

STORAGE BATTERIES
NT6, Mini.. 6 volt, 2⅛"x1¾"x3½"..... 2.45
BB54, 2 Volt, 3"x4"x5⅛"..... 2.75
STORAGE BTRY. CHARGER. 2 to 6 Volts, 6A, self regulating with charge indicator, special! 7.95
CHARGER FOR DRY BTRIES. Use 1 set of A & B's all season! Recharges all 1½ to 90 Volts 6.50
VIBRATORS. 6 Volt **$1.35**; 2 Volt Synchronous 1.00
METERS: Accurate, 2" sq., 0-500 Microamp..... 5.85
0-1 Ma.....**$3.65** 0-3 Ma.....**$2.95**
0-5 Ma.....**2.75** 0-50 Ma.....**2.65**
FLEAWEIGHT HOOKUP WIRE—25 Ft. (5 colors) .25
6 VOLT DYNAMOTORS, with Shockmount base, 250 Volts/65 ma..... 7.95
300 Volt/165 ma. **$9.50**; 180 Volt/100 ma. 7.95
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GYRO ELECTRONICS CO.
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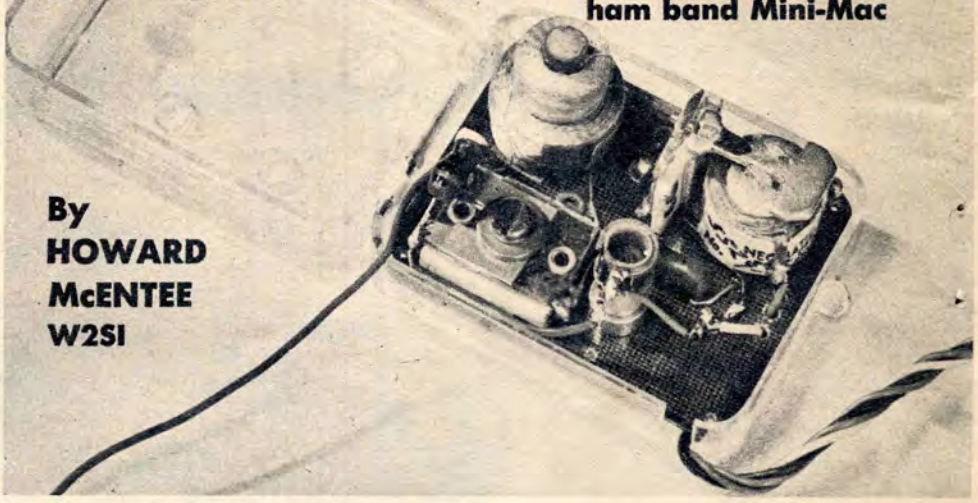
MINI-50

Here's Mac's answer to repeated requests for ham band Mini-Mac



By HOWARD McENTEE W2SI

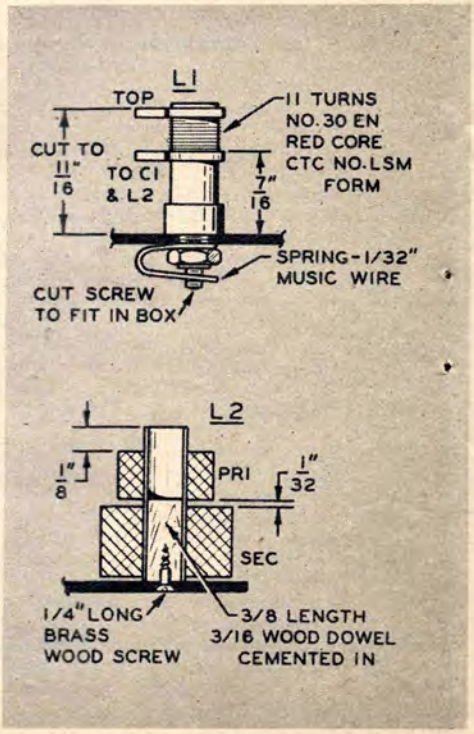
■ As soon as the Mini-Mac appeared, we started to get inquiries as to whether the receiver could be converted to 50 mc., and whether operation there would be as good as it is on 27¼. Since we normally work on 50, this was a problem we had been meaning to investigate for our own use; the job was finally done and here's the answer. Yep—the Mini-Mac circuit does fine on 50! There were a few snags, as there always seem to be in radio. You can't get away with just any arrangement of parts (we found parts placement generally very non-critical on 27¼); things just get considerably more touchy, and it was found advisable to go to another tube, for good results.

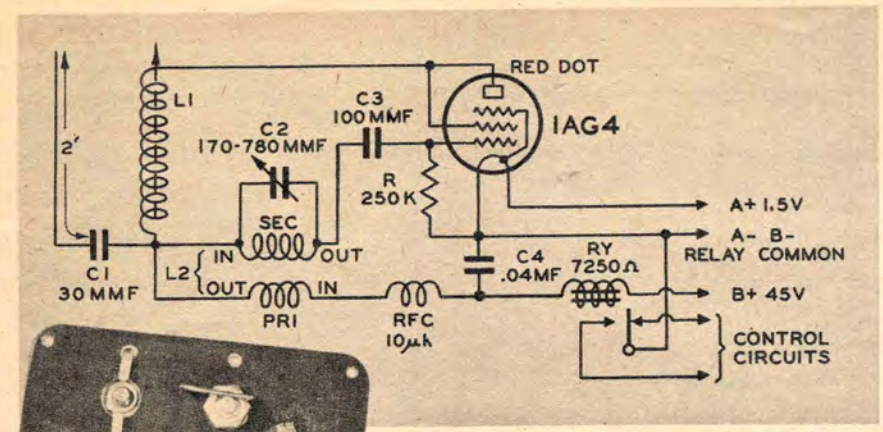
As will be seen from the illustrations, the parts (shown actual size) are put on the base very nearly the same as for the Mini-Mac. We did find that some of them ought to be shifted somewhat, though, and the drawings show what we feel to be the best layout—consistent with the small size of the receiver. It will be noted that the drawings depict the tube in a slightly different position than the photo; the latter is the first version, but follow the drawings for best results.

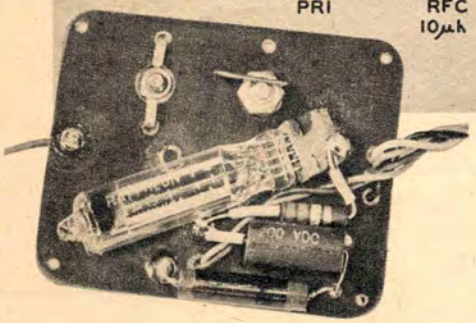
It didn't take long to decide that the CK526—which had worked out so well in the M-M—was not going to do the job on 50 mc. It would operate, but not as reliably as required. A search turned up a splendid tube for the job, the Raytheon 1AG4. While it has somewhat higher filament drain, this is an asset in one way, for it means that the plate current may be run up higher without any damage to the tube. This, in turn, allows the use of the tiny Neomatic relay, so the final receiver is even more compact than the M-M. The 1AG4 works beautifully in the latter receiver, incidentally; however, there is little reason to use it there unless you want to run the plate current up over the 1.8 ma. maximum we suggested for the CK 526.

Receiver may be mounted by the time-honored method of four rubber bands stretching from the four corners, or you can put it in a small plastic box as we

Tuning the 2.2 oz. Mini-50 is through holes cut over L1 and C2. Plug and cable carry all battery and control connections; ant. lead separate.







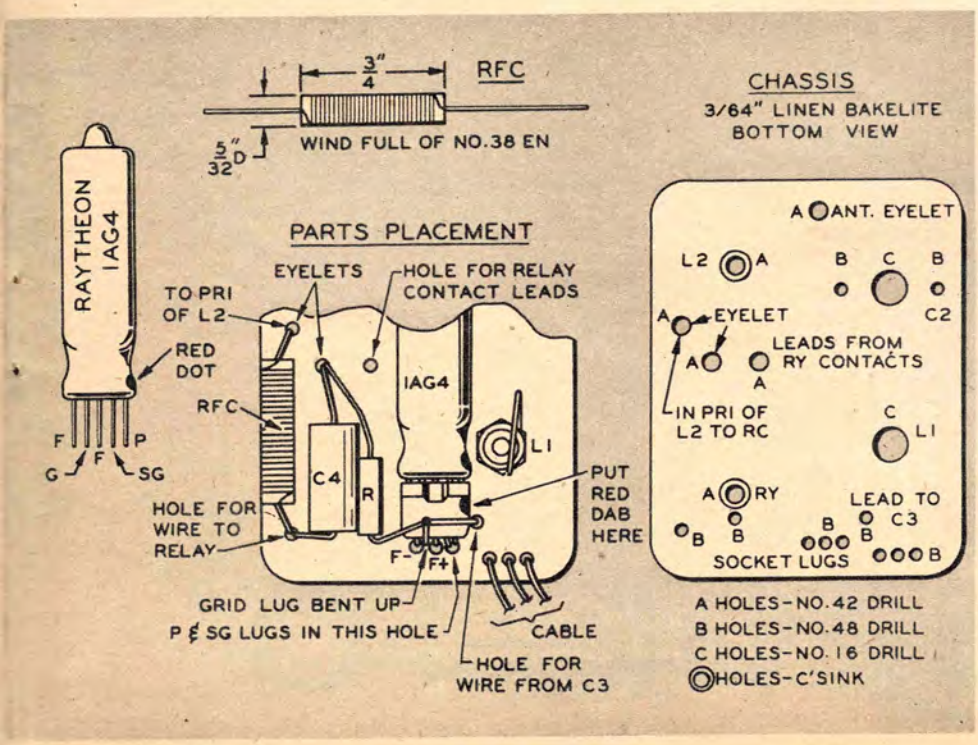
have, and set it in a nest of sponge rubber. This mounting system protects the receiver very well; we have seen planes which were pretty complete wrecks, yet the sponge rubber-protected receiver came through the crash in fine shape. Whether you can use this sort of mounting depends a lot on how much vibration you have in your plane, how much care you take in adjusting the relay, whether you check each prop you use, for balance, etc. It's worthwhile taking a little pains, though, for the sponge rubber mounting has been found very satisfactory, and is coming more and more into use.

As a further means of protection, the set is housed in a plastic box. This adds .45 oz. to the total weight, but we feel the weight penalty is not as important as the extra security afforded the receiver. The box has a couple of strips of heavy plastic cemented in, to form a ledge on which the chasis rests. Several thicknesses of modelplane windshield plastic will do here. Things are really pretty tight, if you use the same sort of box we did; the chassis is positioned just high enough above the bottom inside surface of the box to allow the tube to fit in. This in turn allows just enough space *above* the chassis for the relay and the quench coil. In fact, a shallow groove was cut out of the top so that there would be positive clearance for the upper contact of the relay!

Chassis is of 3/64" bakelite, and we give the full size here, with all holes properly placed. The tube socket is mounted just as in the Mini-Mac, by the lugs. It is placed as shown on the drawings—rather than as it was in the M-M—for a very good reason, to get it away from the bottom of the quench coils. There is no tube clamp; the tube is simply squeezed between the case and the chassis.

As we mentioned with the Mini-Mac, the quench coil does not like any metal in the center, so a very short flat head brass screw holds it by means of a stub of dowel cemented into the core tube. The latter must be cut off top and bottom; we left the top about 3/32" long and it projects through a hole in the top of the plastic case. It was felt this might save the quench coil from being torn loose in a bad crash, since the coil is really held at both ends.

Quench coil is a new type having solid wire on both windings. While the litz-wound unit we utilized in the M-M will doubtless work just as well, it has been found very (*Continued on page* 91)



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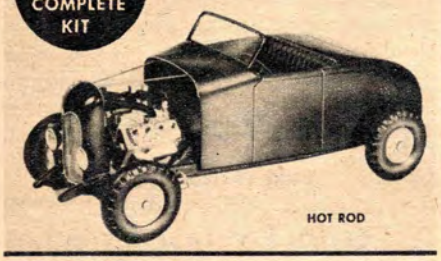

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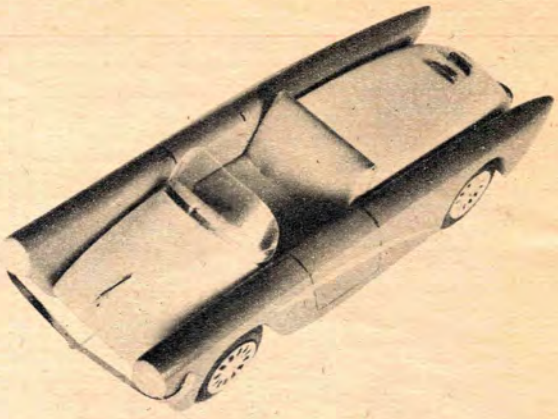
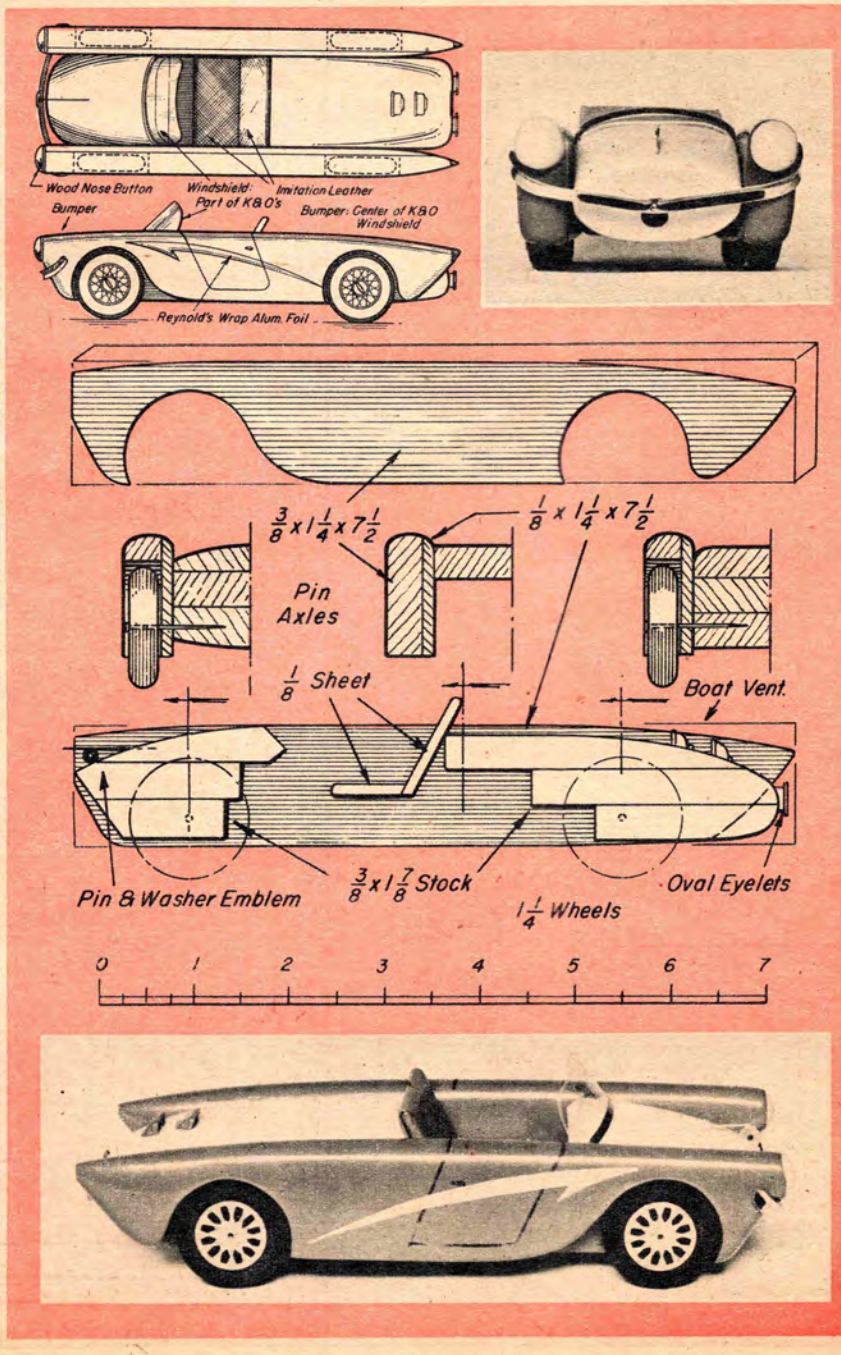


■ Featured on our June cover, this car is unique in that most parts are finished before the model is assembled. You glue together the three pieces that become the rear engine body section, sand these and paint; then make the seat, the front body section and both outside fender-door sections (each with its ⅛" inside piece). Sandpaper all these and paint. When dry glue together for the finishing touches. Headlights and tail lights are painted by dipping those points of the car in paint jar. The 1¼" wheels are from hobby shop.



"My Favorite Model"

BY ROBERT E. HEYMAN
UNION, N. J.

I have built many scale models of everything imaginable, but this fire engine is my favorite. The engine is an old Steamer-Pumper, carefully scaled down from the real thing on display at the Firemen's College in Brooklyn, N. Y. It was built by American La France. My model is made entirely of brass, each part machined on a lathe or milled on a drill-press. Many components are silver soldered together as sub-assemblies, then bolted to frame. Wheels, brake work.

WIN $25.00 WITH "MY FAVORITE MODEL"

Send photo of yourself & model plus details to "My Favorite Model" contest c/o Air Trails HOBBIES For Young Men.

(*Continued from page* 83)

supply will also fit in. Gyro has good supply of Willard BB54A 2 V. storage cells, exact same size as the popular BB54 but with considerably more capacity; price is $2.75.

Builders looking for top grade pneumatic air wheels can get the ZN line, made in 2½ to 6" sizes—from Thompson Model Supplies (Guthrie, Okla.). Wheels are easily disassembled, and spare tires and wheel parts are stocked. Prices are rather high, but these wheels are made to *last;* 6" size costs $14 per pair.

New line of motor-driven servos has been announced by Richard L. Branstner (1672 Humphrey Ave., Birmingham, Mich.). Made in several types, important feature is that all contact strips are of solid gold alloy, which will not fatigue or require cleaning. Rudder servo weighs 2.7 oz., has limit and centering switches, costs $21. 4-position servo and one for elevator use (not self-centering) also available at lower cost. Contact strips will be sold separately. Maker also has barrel-type throttle in sizes to fit engines from .049 to 1.20 cu. in.; carbs cost $10 installed on your own engine, sell for $5.75 otherwise.

Several 27¼ mc. transmitters being sold in finished form by Electronic Specialty Co. (58 Walker St., N. Y. 13); one is ESSCO Fiver—an R.F. unit ready to put in your own case. Comes with tubes, crystal, key and antenna, sells for $15.95. New and improved Model RCX-HP is also 5 watt job; whole works are in 6 x 7 x 9" case and include 6 V. and 110 V. battery charger, 2 V. storage cell, switching system to check currents and voltages, meter, etc. Sold finished, with all accessories for $45.00.

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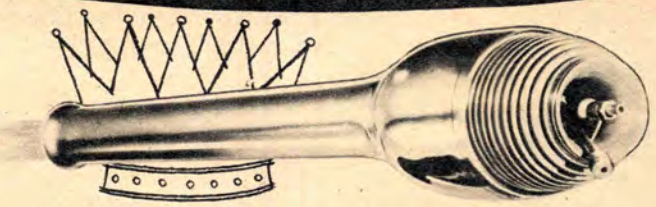

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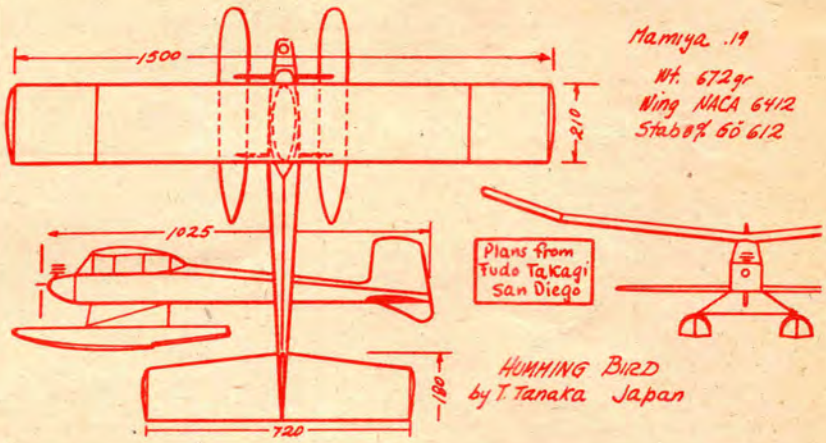
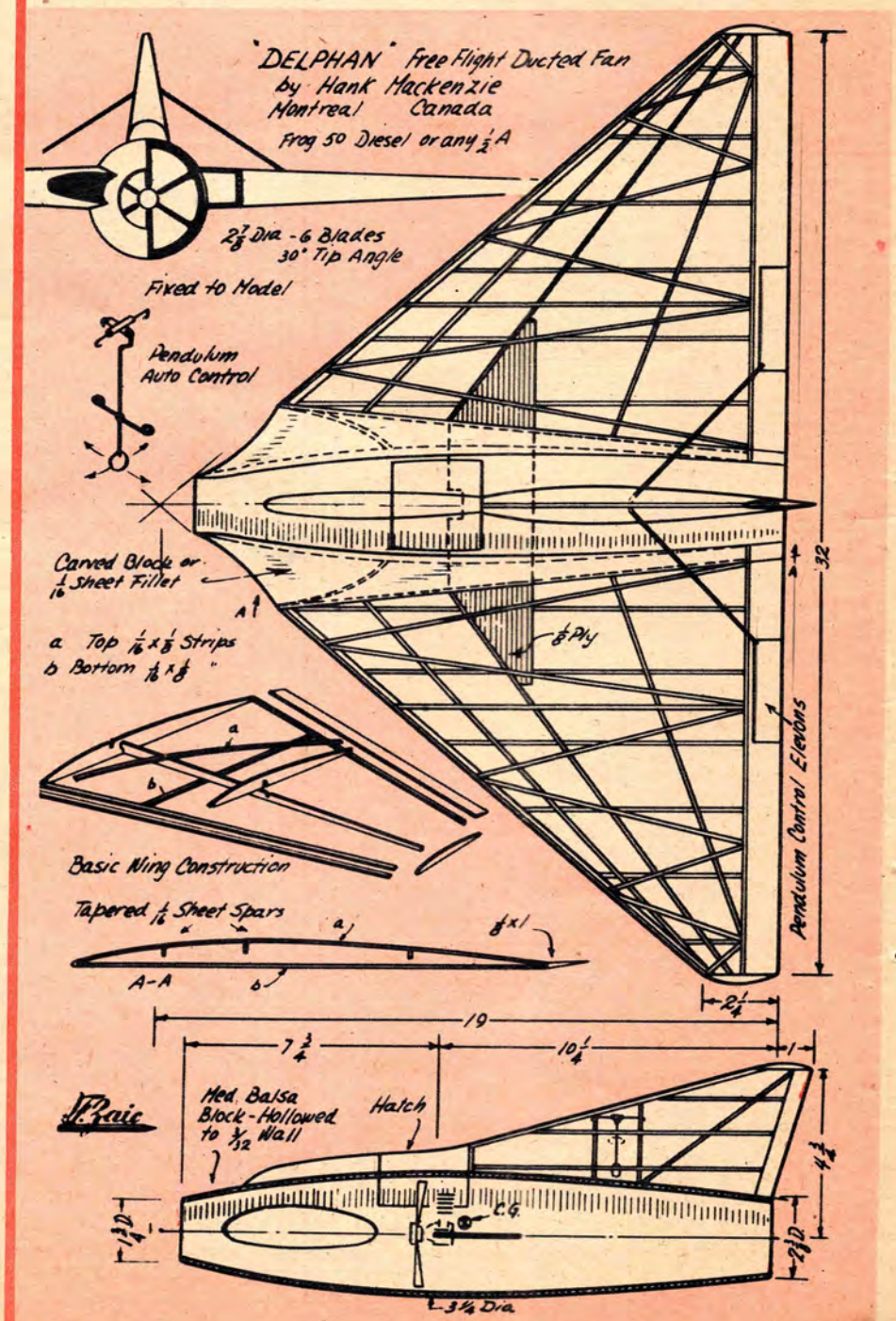
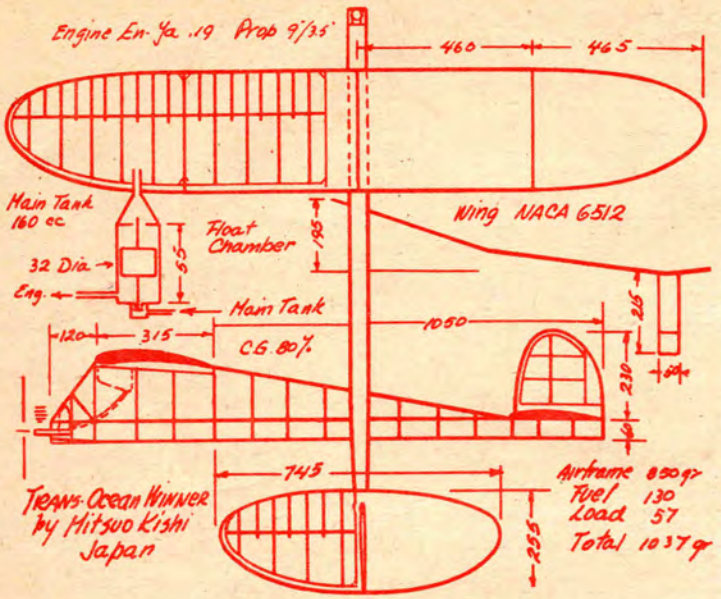
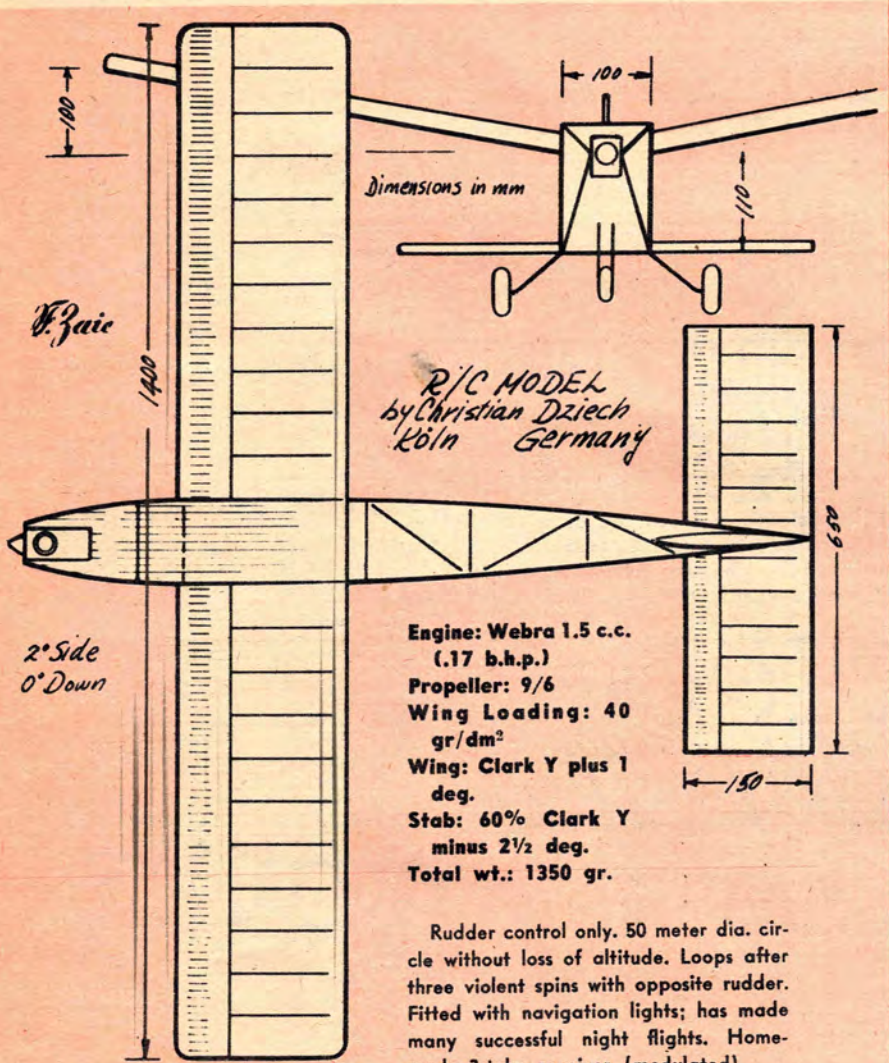
This unusual quartette of Canadian and overseas modelplanes reproduced from Frank Zaic's famed "Model Aeronautics Yearbook" indicates that there's still plenty of original thinking left in the air-model world.



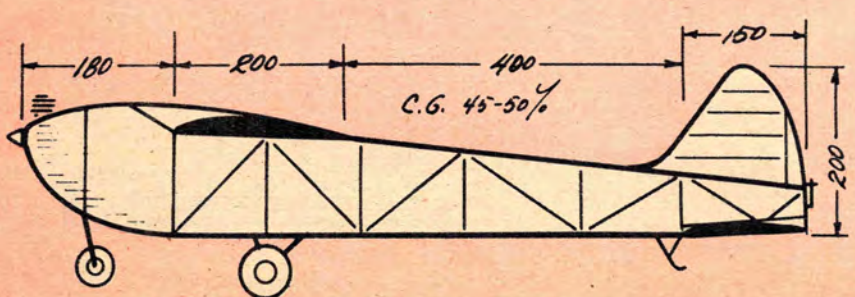






Engine: Webra 1.5 c.c. (.17 b.h.p.)
Propeller: 9/6
Wing Loading: 40 gr/dm²
Wing: Clark Y plus 1 deg.
Stab: 60% Clark Y minus 2½ deg.
Total wt.: 1350 gr.

Rudder control only. 50 meter dia. circle without loss of altitude. Loops after three violent spins with opposite rudder. Fitted with navigation lights; has made many successful night flights. Home-made 3-tube receiver (modulated).



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Ever notice how there's always one personality lad in any crowd at a school talent show, college get-together, civic or service gathering? And the one guy we've always admired is the fellow who stops the show—casually—with his bag of tricks. So we're asking the readers to send in their favorite original magic tricks. Air Trails HOBBIES will pay $25.00 for each one illustrated here. All you have to do is furnish us with a description of your favorite feat, include rough diagram or sketches if required. Send to "Trick Stuff" Dept., c/o Air Trails HOBBIES For Young Men, 304 East 45th St., New York 17, N. Y.

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The Cameron .09 Special Marine Engine can be used in powering model boats of almost any size. In testing during its development, a row boat carrying four people was actually towed by a small radio controlled boat powered by a Cameron .09 Marine Engine.

The engine is of very rugged construction with extremely thick wall sections throughout to provide for even heat transfer and dissipation to eliminate all possibility of uneven expansion or thermal distortion during operation. It is a lapped piston type engine having one-half inch bore and one-half inch stroke, and is precision built, using the best materials throughout. All working parts are heat treated and micro-finished for long trouble-free service.

Water cooling is provided for on both models of the Cameron .09 Special Marine Engine to eliminate all possibility of overheating of the engine which would otherwise cause faulty operation due to improper carburetion. This cooling feature makes it possible to install and operate the engine deep in the hull or in cabins of boats where engines would not otherwise operate properly due to an insufficient stream of air for cooling. Engine runs of any time duration are also made possible by this special cooling feature which is not found in any other model engine.

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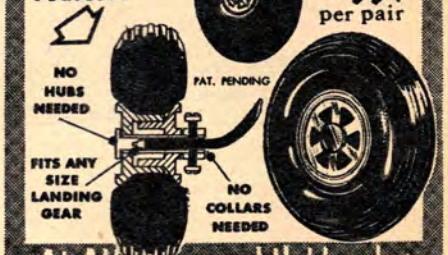

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Ezi-Maid

(*Continued from page* 37)

push it through the tube and connect it to the flywheel. Now add top decking on boat and tin rudder. Cover boat with Silkspan paper applied wet, follow with a fuel proof filler, then color dope to suit.

For straight-away runs begin by reducing pitch on prop to about half; add pitch after adjustments are made. To race in circle on a tether line, attach a flexible wire bridle from the front tip of the sponson to about the point where the side arrow decoration stops—make it long enough so that it can be pulled out about 5 inches. Attach line to bridle at point where bow points about 30 degrees out of circle. Operate in as smooth water as possible. Should your boat upset follow this procedure: unscrew cylinder head, drain out water, don't turn over the flywheel; squirt fuel into engine to clean it, drain this out. Check your plug; if it was glowing when water hit it you'll probably need a new one.

Mini-50

(*Continued from page* 85)

difficult to get a reliable connection to every strand of the litz—and if you don't, the set will act queerly. The single-strand wire on the new quench coil is of a type that does not have to be scraped; just hold it against a soldering iron and the coating will disappear! On some of these quench coils it has been found that the windings are a little loose on the core tube, and may be slid to and fro (this fact makes it easier to cut off the tube without cutting the wire too). Gap between the two windings should be about

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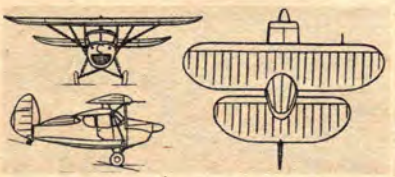

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Charles Atlas

1/32", for proper results.

Clip off the lugs of the trimmer condenser C2, and attach it to the chassis with the two little projections. Run a soldering iron over the cut ends of the lugs to make sure all of them are in good contact.

We used the same RF choke and the same coil form as in the M-M, but the winding on the latter should be as shown; follow carefully the placement of the winding on the core. It will be seen that the form is cut off short, to go in the plastic case. The end of the core screw is also cut off, but this should not be done until you check tuning, and find out about where the core will have to be in the coil. A 1/32" music wire spring bears against the core screw to hold it tight against vibration.

You will note when wiring up that the circuit is just about the same as that of the Mini-Mac, except that the RF choke has been moved to the other side of the quench coil primary. Some of the circuit values are different, of course. Those specified are about optimum for use on 45 V. The receiver will do fine on higher voltage, but if you want to raise the voltage to get higher relay current, it is wise to use the next lower value of trimmer, C2 (Arcs #468). We strongly advise builders of this receiver to read carefully the article in the Feb. '54 issue of Air Trails, covering the Mini-Mac; the operating instructions are just the same for both receivers, as are the hints on getting proper results. The Neomatic relay we used was set to operate at 1.8 ma. and release at 1.1 ma. On 45 V., the plate current runs at about 2.2 ma., and drops to .75 on a rather weak signal. With 60 V., the plate current range will be about 3.1- 1.0 ma. Sensitivity seems somewhat better with the higher voltage. Total weight with case, tube, cable and plug, is 2.2 oz.

Parts List

L1—CTC type LSM coil form with red core (see dwg.). L2—10 microhenry RF choke (or make as shown): Control Research. L3—quench transformer; ESSCO (solid wire type). Ry—Neomatic Type 5529, 7250 ohms. C1—30 mmf. ceramic, CRL type D6. C2—170-780 mmf. trimmer; Arco type 469. C3—100 mmf. ceramic; CRL type D6. C4—.04 mf. paper; Aerovox P83Z. Tube—Raytheon 1AG4; ESSCO. Socket—sub-min. 5 prong. R—250,000 ohm ½ W carbon. Base material, wire, cable plug. Box—2⅛" x 1⅝" x 1".

Readers Write

(*Continued from page* 11)

byist start to create for himself, thus contributing to the Nation's development of worthy new scientific data. Hobbies sets a much-wanted new grade on what should be given to Junior to read.

Wallace Rigby, New York, N. Y.

• To make the acquaintance of Mr. Rigby, if you haven't already, see page 78. And he's shown in the photo in the next column.

. . . I think the new ATH is the best mag in the business. Like the new section called "Auto Progress," by Mr. Rolfe. Love those ships by Mr. Musciano, I think he is one of the best in scale. Speaking of scale, where is Cal Smith? I share your opinion in that Dr. Good is the best in R/C. Can't hardly wait to see that tone rig of his.

Say, who is the babe with the egg, also shown with some local yokel (There's Money in Magic)? I would almost trade my oldest AT for her. Keep this good mag coming.

Jerry Brummett, Maysville, Okla.

. . . I've just seen your May issue and the excellent article titled "High School Grads into Air Force Pilots" which should do a great deal to stimulate interest in the USAF flying training program. It's one of the most complete and informative pieces that I've seen done on the present concept of AF pilot and observer training. Naturally, we were also delighted to see one of our photos, taken by the veteran Hans Groenhoff, used to help illustrate the story. But we were particularly pleased by the treatment of your subject since it emphasizes in an outstanding manner the opportunities for a flying career in the Air Force through specialized military aviation training that's now available to American youth. Congratulations on a job well done. Our compliments also on a fine magazine. You're really blossoming out!

James Greenwood, Hawthorne School of Aeronautics, Spence Air Base, Moultrie, Ga.

. . . Just a line to congratulate you on the first issue of HOBBIES which I have just received. This is really a first-class publication. It is odd that there is not a similar publication on this side of the Atlantic for I am sure that it would go over in a big way with British youth. I am surprised that you do not get the magazine on British bookstalls. I have seen your publication on sale in Sweden and Denmark but *never* in this country.

William Green, Kent, England

Wallace Rigby, aboard the S.S. United States, presents one of his 3-foot cardboard models of liner to Capt. Frederick Fender.

. . . Congratulations on your new Air Trails HOBBIES For Young Men. Seems like there's much more reading and information that ever before. Also, its title is quite apt to attract more readers who are not modelers but who might become interested in this very fine hobby.

Don Kleman, Fort Pierre, So. Dak.

News for German AF Fans . . . I am 14 years old and an avid reader of your magazine, but I would like to see more World War II German aircraft models. I have built the Messerschmitt Me. 109E and I am now working on the Focke-Wulf 190, and I like them very much.

David Heath, San Lorenzo, Calif.

• We expect to cover the German Air Force rather thoroughly in our next Air Progress Annual.

Collection in Plastic . . . I thought you might be interested to know that I have an airplane collection of 80 plastic planes. I have enclosed some pictures of my collection and me. I read about the boy in your May issue on page 8, so I thought I would send you this. I was 12 years old in Jan.

Kendrick Siegrist, Summerville, Ore.

• A fine collection it is, Kendrick! The display which you have spread out on all those tables seems to take in just about everything. And the magazine pictures (including ours) which you have cut out and placed on the walls of your room make a highly appropriate background.

Penalized for Fast Reading . . . I am interested in the plans for the following airplanes which appeared in your 1954 "A.T." Model Annual: (a) Republic P-47 B-D-N, (b) Slinger, (c) Convair XF-92A. I have been an avid fan of your magazine for many years and thoroughly enjoy every issue. The only criticism I have is that your magazine is too good. I read it so fast that it seems I do nothing but wait for the next issue all month long. I would like very much to see some Half-A C/L scale. It seems to me I haven't seen anything but A, B, and C C/L's for many moons. You have done a wonderful job on the Annual for '54 and I don't think this letter will be the first in congratulating you. But first or last I'm glad we modelers have Street & Smith to turn to.

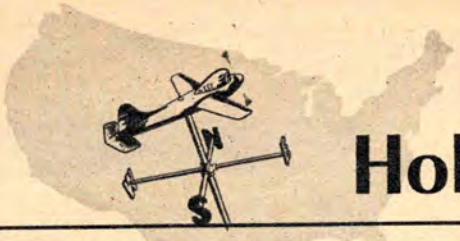
Neil Norrell, Jersey City, N. J.

P.S. Fine cover by Cal Smith.

• Full-size plans for Air Trails Model Annual planes are available from Hobby Helpers, 770 Hunts Point Ave., New York 59, N. Y. Write H. H. for listing.

Complete Data on JAF . . . I recently purchased your latest Air Progress magazine and I think it's the best yet, especially the data on the Japanese Air Force. I've never found a more complete list of information on the air force of the Rising Sun, and the photos are wonderful.

Dennis Shirk, Las Vegas, Nev.



Hobby Shop Directory

Model Builders! Here's a listing of the nation's leading hobby shops. You'll want to file it away—and when you're in the neighborhood, drop in and browse around. They're expecting you.

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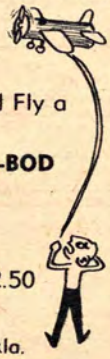

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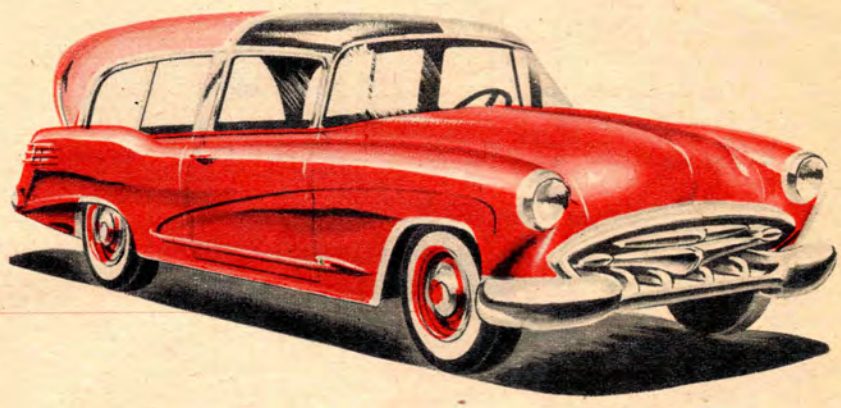
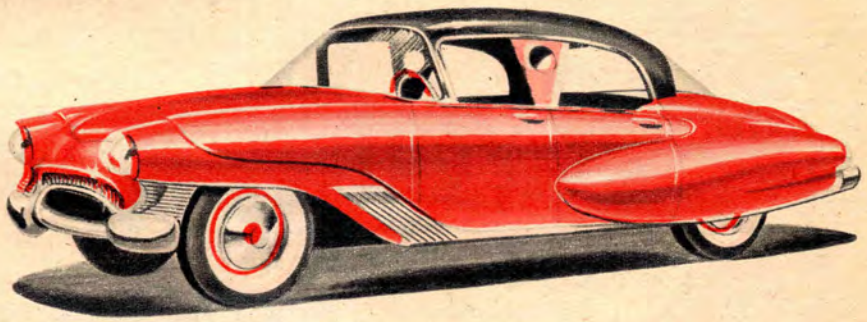
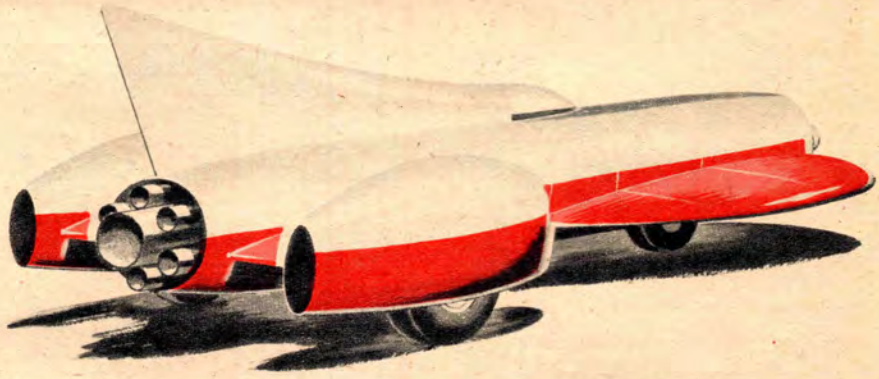


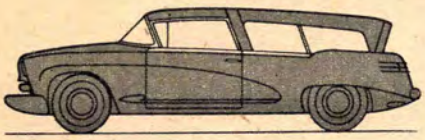




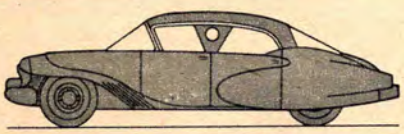
AWARDS OF $50.00—$25.00—$10.00 EVERY ISSUE

Cash awards will be made each issue for the three most significant auto designs submitted to this magazine. $50 will go to the top design, $25 to the second and $10 to the third. You may submit sketches for an original design auto, for a restyled car, for sportscars, family sedans, record cars, hot rods, military vehicles or unusual trucks. Include side, front, rear and top drawings, plus sketches of the proposed vehicle from three-quarter front and three-quarter rear positions. Sorry, we cannot enter into any correspondence about this contest. Send entries to Auto Design, c/o Air Trails HOBBIES For Young Men, 304 E. 45th St., New York 17, N. Y.

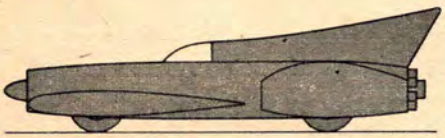
It's easy to enter—see rules announcement!



Top entry of the month is this all-metal station wagon by Bob Miller of Nashville, Tenn., combining modern design with utility and comfort. Car accommodates six persons and a generous amount of luggage behind the rear seat, which space can be enlarged by lowering the bottom half of the rear door, platform fashion. Roof over the driver's seat is of tinted Plexiglas. The car is powered by an overhead valve V-8 engine equipped with a 4-barrel carburetor and twin exhausts.



Second on the list, a sport sedan by Clifford W. Blanke of Glendale, Calif., whose long-standing hobby is design of automobiles. The car is a four-door type of very modern lines, having a low silhouette, sloping hood and radiator air-scoop typical of sport cars. Wrap-around windshield, generous side and rear windows give excellent visibility. Streamlining is carried out to include even the headlights. Front fender sweep aids cooling.



Jet record car by Robert T. Stevens of Melrose Park, Ill. Ramjet and rocket engines in combination give power. Start made on rocket and when the car reaches a speed of 150 mph the ramjet takes over. Naturally, this type of automobile is not suitable for highway use, but should do well on Bonneville Lake. The car has only three wheels and a horizontal fin set at an angle to keep pressure on the front wheel. Vertical fin prevents racer from yawing from side to side during high-speed runs.

All types are eligible: restyled passenger cars, original sport jobs, hot rods, or military types.

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THE BASIC TRAINER has aluminum landing gear, complete hardware (pre-fab—only 7 parts to bolt and glue together), ready to fly in an hour; for engines .14 thru .35. Class A-B & C. Sells for....$2.95

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The Last Word on HOBBIES

■ Old-Timer reports in. Bruno Marchi, former star model flyer and designer for the famed Jordan Marsh-Boston (Mass.) Traveler Junior Aviation League, visited with us briefly in NYC. Bruno scored many American and Canadian victories in big air-model meets; he served as Technical Director of the Academy of Model Aeronautics. Mr. Marchi now lives at 2072 Mt. Veeder Rd., Napa, Calif. If you're a member of the Early Model Birds drop Bruno a line.

Philadelphia's Model-Hobbies Assoc. launched its long-planned "Hobby Time with Bill McMillan" over WCAU-TV. The 15-minute program (to run till the middle of July) is on Saturday mornings at 9:15. The first show with Matt Sullivan as guest star featured plastic scale models; Matt directed the '53 National model-plane contest.

All the big headlines during the past several months on the H-Bomb should not have surprised any of old "AT" readers. Back in the December 1946 issue this appeared:

"U-235 and plutonium are the only atomic types which we can set off directly. But the 100,000,000° temperature of exploding U-235 can set off a number of other reactions that are even more violent than the U-235 reaction. . . . Then there's a far more violent reaction between ordinary hydrogen and the light metal lithium. Lithium hydride is an atomic explosive 2.3 times as powerful as U-235—once it is started. With U-235 available, we can use a Hiroshima or Nagasaki type bomb as the little primer cap for a real atomic bomb. There's plenty to be had."

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NOT A KIT

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It is supplied completely assembled including hardware with the electric motor all installed and wired up. It is only necessary to insert an ordinary flashlight battery in the built in battery holder and you are all set to go.

As the design, fittings, hardware, etc., vary, the boat you receive may differ in appearance from the above illustration.

Complete Price...Post Paid...Only...$4.98
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The newest version of one of the most popular R.C. jobs ever designed. Simplified in construction, and improved in performance. A fine kit, produced to Berkeley's standards of completeness and engineering exactness.

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(Empty weight 21 oz. — Radio, Equip., 14 oz. max.)

Split rudder tab for separate trim adjustments. Clip-in prone engine mount, tri-cycle gear.

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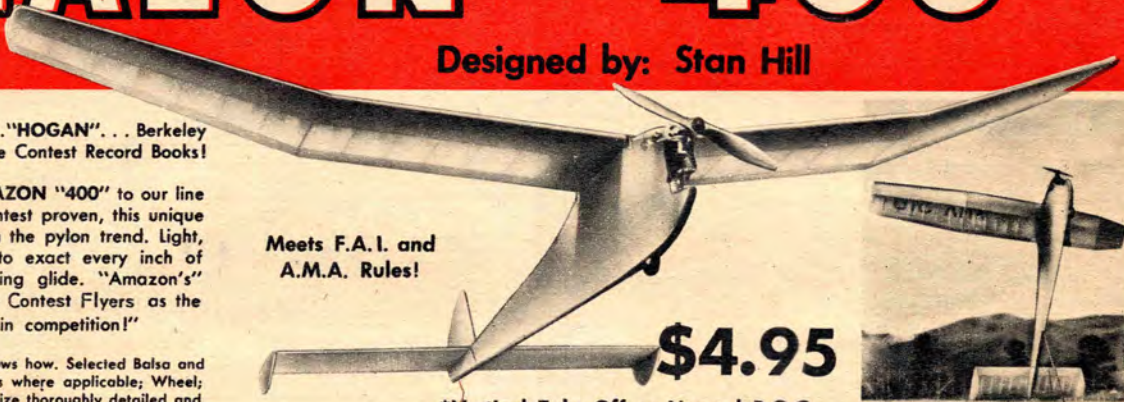

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Vertical Take-Off

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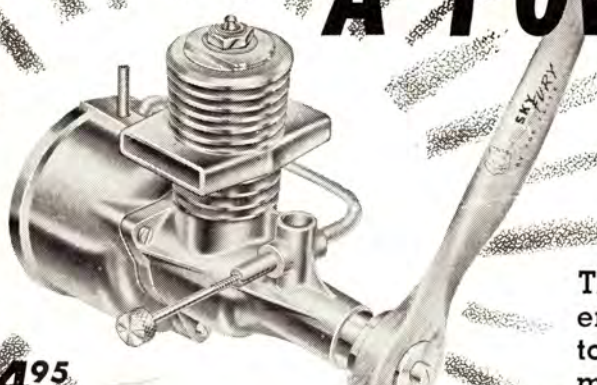

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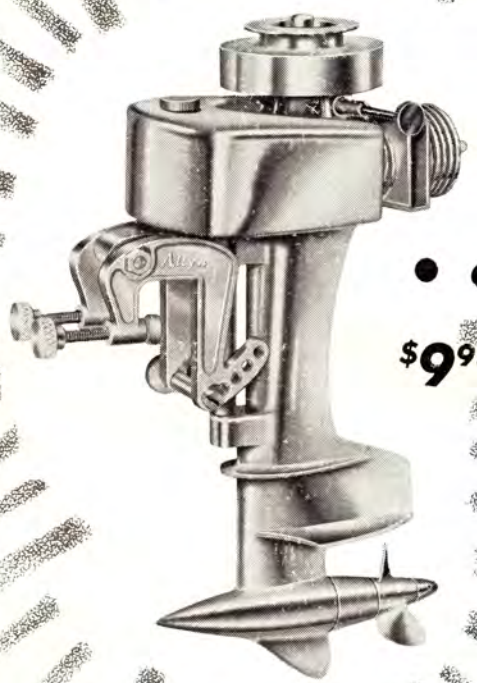

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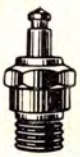
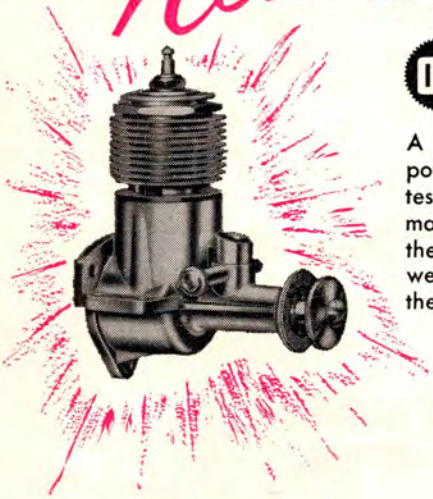


"OK" GLOW PLUGS
Short or long — 59¢

1 New Engine



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Stroke	**.590**
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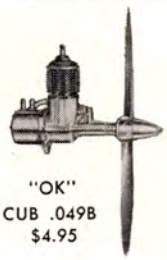
As illustrated

To make sure your Cub's a winner, always use "OK" Glow Fuel. A methanol-base fuel with extra punch. Assures quick firing, complete combustion — leaves no varnish or residue.

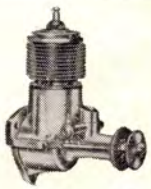
85¢ Pint



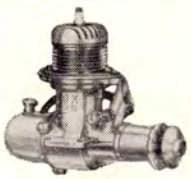
"OK"
CUB .049B
$4.95

"OK" CUB .074
$5.95

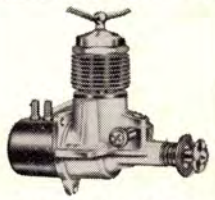
"OK" CUB .099
$6.95



"OK" CUB .14
$7.95



"OK" HOTHEAD
$10.95



"OK" CUB DIESELS
.049 $5.95
.075 $7.50

2 New Kit

OK CUB .049B POWER KIT

A WINNER . . . FOR PRICE! Enjoy the thrill of assembling your own engine—and save money at the same time! Kit contains all the parts you need and easy-to-follow instructions.

only $3.95

"OK" COMBINATION PACKAGES
CUB .049x.....$5.75
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